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Paper TRADE JOURNAL

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VOLUME 126, No. 8 FEBRUARY 19, 1948

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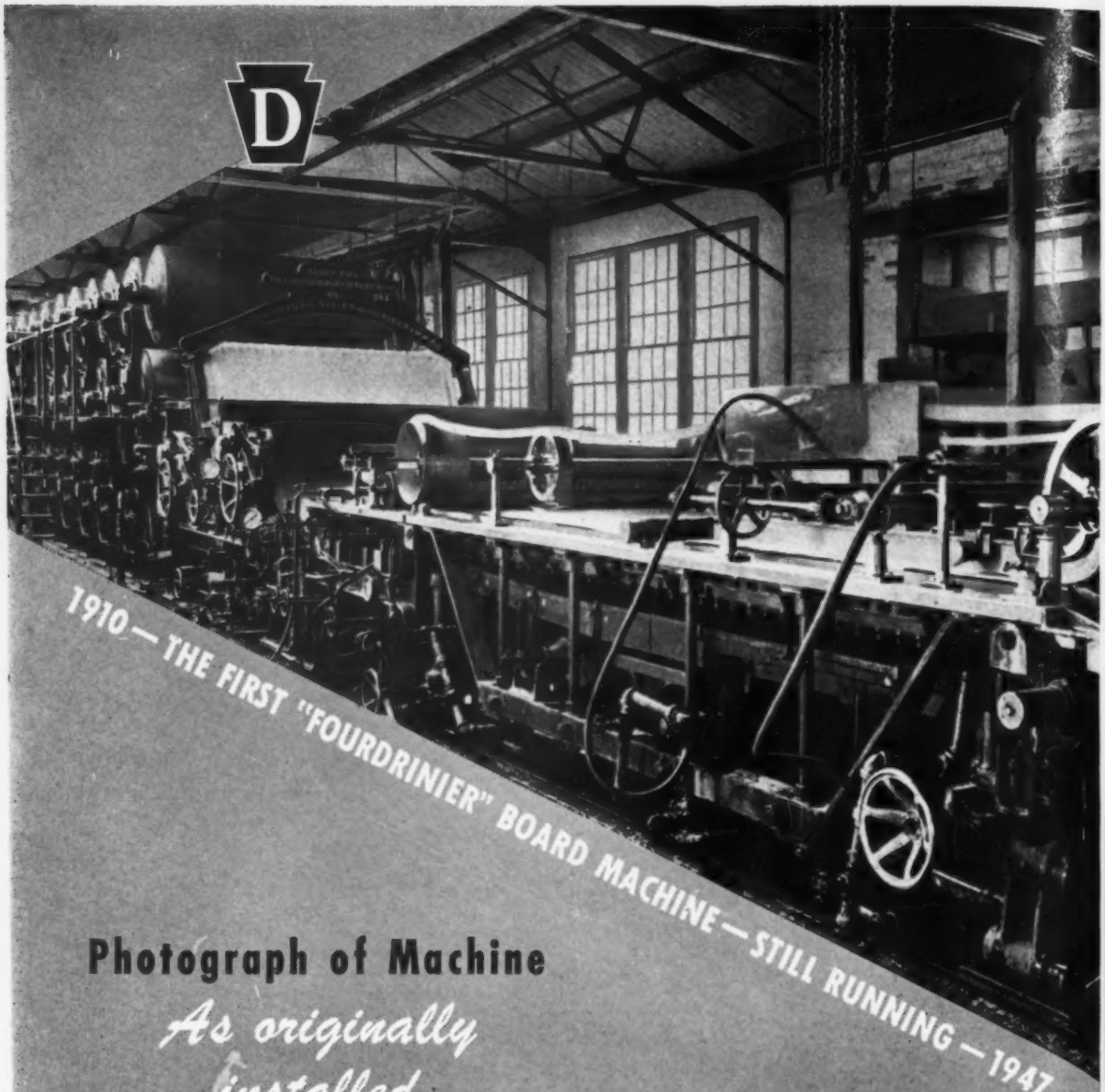

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CALENDAR OF COMING EVENTS

February 22-27—American Paper & Pulp Association, Annual Convention. The Waldorf Astoria, New York. N. Y.

February 23-26, 1948—Technical Association of the Pulp and Paper Industry, Annual Meeting, Hotel Commodore, New York City.

May 18-20, 1948—American Pulp and Paper Mill Superintendents Association, Annual Meeting, Roosevelt Hotel, New Orleans, La.

June 11-12, 1948—Paper & Twine Association, Annual Convention, French Lick Springs, Indiana.

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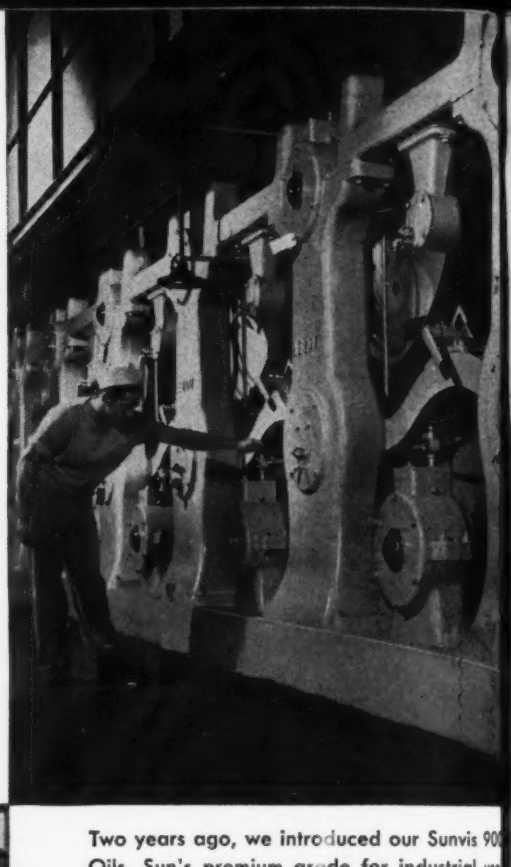

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Paper TRADE JOURNAL

VOLUME 126, NO. 8 REG. U.S. PAT. OFF. FEBRUARY 19, 1948

New England Expands Its Paper Production

BOSTON, Mass.—While the paper and pulp industry in New England has lost some ground, relatively, because of growth in other regions which was based largely on exploitation of previously unused resources, the industry has held its own and, in fact, expanded on a volume-production basis.

One estimate placed investment in plant, machinery and equipment in New England pulp and paper mills at approximately $625,000,000 in 1946, but a more accurate appraisal of the value of the industry will be forthcoming in March, when an exhaustive survey by the Federal Reserve Bank of Boston will be ready. The bank will determine the total investment value of the plants, machinery, equipment, timberlands and other assets owned by pulp and paper manufacturers in New England.

This section's paper and paperboard production during 1947 is estimated at more than 2.6 million tons, a gain of 4 percent over 1946, and equalling 12 percent of the national total.

Indications are that production will continue to increase in the early part of 1948, but trade expectations are that supply of paper and paperboard, except newsprint, will balance demand some time during the spring as a concomitant of a 4 or 5 percent increase in production stemming from newly-completed plant installations.

Paper and allied products industries ranked eighth among New England manufacturing industries in number of employees in June, 1947, with 71,500 workers.

Manufacture of pulp and paper, together with all types of paper products, including boxes, envelopes and similar items, comprises an industry group in New England with products valued at more than $265 million.

One particularly important phase of the paper industry and allied products, H. B. Shepard, economist of the Federal Reserve Bank of Boston, explains, is that the heaviest concentration occurs in the northern part of New England, where the incidence of other industries thins out. To illustrate, in Maine the paper companies rank second in manufacturing employment, with 16.5 percent of the total, and in New Hampshire places third, with 9 percent. Communities such as Berlin, N. H., and Millinocket and Rumford, Me., are almost entirely dependent upon the paper industry for support of their inhabitants. In Massachusetts, Holyoke and Fitchburg for many years have been widely known for the quantity and quality of paper produced there. In Maine, alone, pulp and paper mills plan to spend $25 million for improvement of their facilities during the next five years, it is reported.

White pine, a soft wood which abounds in New England, will be utilized more in sulphate pulp production in the future. Never used for pulp wood until recently, its utilization is now held to be economically feasible because of technological advances in the paper industry. New England mills have used spruce, fir and hemlock almost exclusively in the past.

Walton League Finds Enforcement Is Lax

FOND DU LAC, Wis. — A committee of the Wisconsin Izaak Walton League has decided that the state's pollution problem is due to lax enforcement rather than to faulty laws. Meeting here February 12, the committee reported that waste from industrial plants has taken a tremendous toll of fish in rivers and lakes.

"This has repeatedly been done with the full knowledge of the Wisconsin Pollution Committee," the committee report stated. "There are outstanding cases where public waters are polluted by substances that may not kill fish but which certainly destroy public use of the waters.

"It is obvious that if any pollution exists in Wisconsin, it is not the fault of the laws; the blame rests entirely with those charged with the enforcement."

The committee found that industrial concerns, municipalities, and "even state institutions" have dumped domestic waste into rivers.

Warrensburg Mill Resumes Operations

WARRENSBURG, N. Y.—The Warrensburg Pulp and Paper Company has resumed operations after a shutdown of two weeks for the overhauling and changing of machinery. The majority of the employes were furnished employment on the repairs about the property during the suspension of operations.

ERP Omits Newsprint From Relief Program

WASHINGTON — Newsprint exports are not contemplated under the European Recovery Program, and the State Department does not plan to advocate shipments of United States newsprint to Europe or elsewhere, Senator Homer E. Capehart, chairman of the Senate newsprint investigating subcommittee, was informed last week by Charles E. Bohlen, counselor of the Department.

Answering an inquiry by Senator Capehart, Mr. Bohlen, for the Secretary of State, wrote Senator Capehart:

"Your letter of January 14, 1948, stating that you have information to the effect that the Department of State is contemplating the shipment of some American-made newsprint to Europe, has been received.

"During the recent war when newsprint controls were in effect in the United States the Department of State in conjunction with other government agencies advocated the allocation of limited quantities of newsprint of foreign countries. Actual allocations were made pursuant to determinations by an interdepartmental committee.

"Since the termination of newsprint controls on December 31, 1945, the Department has not advocated the shipment of newsprint from the United States to Europe or to any other destination. There has been a free market for newsprint since that date, and although supply is less than demand in the United States, foreign countries are free to purchase here in the absence of controls.

"As you state, the maintenance of a free press depends on adequate supplies of newsprint. This problem exists for European countries as well as for the United States. As recognized recently in the paper trade press, the shortage of newsprint in these countries is a serious handicap in combating subversive propaganda. However, the Department of State does not plan to advocate shipments of United States newsprint to Europe or to any other destination. Also, newsprint exports are not contemplated under the European Recovery Plan as presently formulated."

The letter referred the Senator to the Department of Commerce for export and import statistics he had requested.

PERSONAL

Brown Names Coombs As Purchasing Agent

BERLIN, N. H.—Kenneth V. Coombes, manager of purchasing for the General Chemical Division of the Allied Chemical and Dye Corporation, New York City, has been named general purchasing agent for Brown Company, assuming his new duties February 9.

Mr. Coombes has been engaged in industrial purchasing for more than 20 years. In 1926 he joined the Engineering and Management Corporation in Whippany, N. J., as purchasing agent. Two years later he became assistant general purchasing agent with the Nichols Copper Company, and in 1931 was transferred to Canadian Copper Refiners, Ltd., where he served as purchasing agent until 1940. He joined Allied Chemical and Dye in 1940.

Lee Leaves Navy for Kimberly-Clark Research

NEENAH, Wis.—Charles A. Lee, formerly of Bethesda, Maryland, has joined the staff of the Research and Development Laboratories of Kimberly-Clark Corporation, Neenah, according to an announcement by H. A. Rothchild, Technical Director.

Mr. Lee was formerly employed by the U. S. Navy at the David Taylor Model Basin, Carderock, Maryland, where he was civilian Chief of the Hydraulics Section of the Hydromechanics Division. A graduate of the University of Wyoming where he received a Bachelor's degree in Civil Engineering, Mr. Lee took his Master's degree at Lehigh University.

Wisconsin Chemists Elect Byfield

APPLETON, Wis. — Abbot Byfield of this city, manager of the research and development laboratories of Kimberly-Clark Corporation, has been elected chairman of the Northeast Wisconsin section of the American Chemical Society, succeeding Paul E. Truttschel, research chemist for the Appleton Coated Paper Company.

Burns Sees Struggle For Union Survival

ALBANY, N. Y.—In a recent address here, Matthew J. Burns, who retired as president of the International Brotherhood of Papermakers, declared that the issue before the union now is no longer a contest with the employers. We stated that the union has already won that battle and the controversy before us now is whether or not this union or any union can act as a free agent for its members or whether the government will take over the functions of the unions.

He claims that this is a battle that will be fought out on the political field in the days immediately ahead and will go through the legal and judicial systems of the land. The organization, formed in 1886 at Holyoke, Mass., has maintained its headquarters in Albany since 1910. It boasts of a membership of 56,000 in 33 states and six provinces of Canada and Newfoundland. A new structure, now under construction at North Pearl St., is expected to be ready for occupancy by May 1.

Arkell and Smiths Appoints Superintendent at Mobile

CANAJOHARIE, N. Y.—William Hahn has been appointed by Arkell and Smiths, prominent multiwall bag manufacturer, as superintendent of the new Mobile operation. Mr. Hahn was formerly assistant superintendent of the Canajoharie multiwall bag plant and he is now heading up the largest manufacturing unit in the company.

Mr. Hahn enlisted in the Army Air Corps in June, 1941 and was discharged in July, 1945. He served in the North African, Near East, and Italian campaigns.

This new plant, which began operations this January, marks the third major multiwall bag plant constructed by Arkell and Smiths in the last twenty years.

Hickox Returns from Army To Container Laboratories

CHICAGO — Lee Hickox, formerly Chief of the Packaging Section, Military Planning Division, Office of the Quartermaster General, has joined the staff of Container Laboratories, Inc. and will make his headquarters at the Chicago office. Mr. Hickox is a native of Illinois, a graduate of the University of Illinois and the Harvard School of Business Administration. Prior to the war, he spent more than ten years with the Container Corporation of America in various capacities in carton, container, and sales research divisions.

He has recently been in charge of a special development program with the Standard Cap and Seal Corporation.

Fox Opens Under Own Name

NEW YORK—J. L. Fox, formerly an officer of the Pulp & Paper Trading Company, has opened his own business under the name of J. L. Fox & Company, at 415 Lexington Avenue.

Kimberly-Clark (Canada) Enlarged Noble's Duties

TORONTO — Egerton S. Noble, for many years managing director of Spruce Falls Power & Paper Company, will henceforth devote his entire time to the various Kimberly-Clark Corporation activities in Canada.

A major purpose of the change is to provide over-all staff coordination in connection with the steady growth of Kimberly-Clark activities in Canada, which now, through direct subsidiary and affiliated companies, include three mills, two modern towns, as well as administrative offices in several cities. Mr. Noble, a vice-president of Kimberly-Clark Corporation of Canada will not confine his activities to that company alone, but will work closely with the executive management of the U.S. company.

Current employment in the company's Canadian activities approximates 3,000, excluding those employees in presently unfinished construction projects and the numerous camps and settlements of its woodland operations.

In replying to the appointment, Mr. Parker states: "It represents a culminating effort on our part to solidify our various activities—from forest to product—which we have built up in Canada." Mr. Noble's headquarters will be in Toronto.

Guy McRae Minard has been named to succeed Mr. Noble as manager of the Spruce Falls mill and town operations at Kapuskasing, Ont., according to Charles H. Sage, vice-president of Kimberly-Clark and president of Sturgeon Falls Power & Paper Company.

Lesavoy Retires as Paper Cup President

NEW YORK — I. Lawrence Lesavoy has retired as president of Paper Corporation of America. Mr. Lesavoy has been succeeded by Robert W. LeRoy who was formerly executive vice-president of the company. Robert C. Clark, sales manager, has been elected vice-president. Joseph Dannenberg was elected treasurer succeeding Murray Landy, and David Getz was re-elected secretary.

Arnold Louis Joins Federal Adhesives

BROOKLYN, N. Y. — Federal Adhesives Corporation has added Arnold S. Louis to its research and development staff. He has previously been connected with the consulting firms of Resinous Research Associates, Foster D. Snell and Centro Research Laboratories, where he had wide experience in the synthetic resin field.

Mr. Louis attended Clarkson College of Technology and served as an engineering officer in the Army Air Force during the war. At Federal Adhesives, Mr. Louis will work mainly with new adhesives from synthetic resins as well as technical service in solving customers' problems.

...the record shows!

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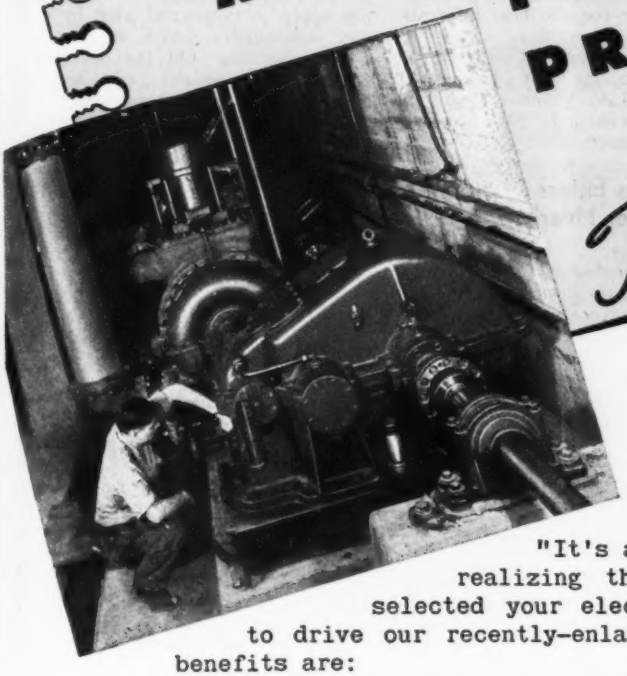

Here's what Mr. Dwight L. Stocker, President of the Michigan Paper Company, Plainwell, Michigan, has to say about this G-E 300-hp turbine drive:

"It's a pleasure to tell you that we are realizing the benefits anticipated when we selected your electrically-governed steam turbine to drive our recently-enlarged No. 4 paper machine. These benefits are:

1. Accurately maintained speed eliminates one of the variables in paper making. The machine tenders are free to control the other variables.
2. Preset running-speed control permits running the machine at the proper speed for maximum output and highest quality.
3. Preset control of machine wash-up and wire-souring speeds, with the control dial behind a locked door, eliminates variations in the speeds of these operations, other than those selected by the mill management. We believe this will increase wire life, reducing costs and increasing production.
4. Push-button selection of speed relieves the operator from the necessity of watching a tachometer on different operations. Thus he is free to give proper attention to other adjustments on the machine.

In general, we find this machine much easier to control than our other machines. In addition, we find our over-all steam balance is somewhat better than anticipated".

General Electric turbine drives can help you lower operating costs, step up production. If your machines require highly reliable drives with accurate speed control, why not have experienced G-E engineers help you in application of the right drive?
Get in touch with your G-E Apparatus Sales Office, or write Apparatus Department, General Electric Company, Schenectady 5, N. Y.

GENERAL ELECTRIC

Central Labor Union Favors Holyoke Plan

HOLYOKE, Mass. — While paper mill officials and heads of the Holyoke Gas & Electric Department remained at odds over proposed federalization of power on the Connecticut River, the Holyoke Central Labor Union has come out in favor of the power survey in Holyoke. But rather than have a repetition of the destructive quarrels of the past, it asks that officials of the Gas & Electric Department, and Holyoke Water Power Company, controlled by mill interests, sit around the conference table and settle their problems for the good of Holyoke.

The CLU has been examining the power question since it was suddenly tossed into the community last December without any advance notice.

Manager Francis H. King of the Gas & Electric was invited to give his side to the CLU members. President Robert E. Barrett of the Holyoke Water Power Company was given an audience. The third week, representatives of the manufacturers who object to the King plan were heard. Then Manager King and Philip E. Bond, engineer, were invited back again to clear up some points.

In the report, the CLU says, "It is presumed that all persons are in favor of getting more and cheaper power."

The report went on to say:

"If something can be done to utilize all the resources of the Connecticut River and give more hydro-electric power to the citizens of Holyoke, then it should be done immediately. From all accounts such an enterprise would be tremendous in size, calling upon an expenditure of a vast sum of money. Before the outlay of this money, it becomes necessary to carry out in every detail a complete investigation of the wisdom of incurring the enormous expense quoted by the experts. This survey, we understand, would take at least three years. To this survey we willingly subscribe.

"In the meantime, it is for the best interests of all the citizens of Holyoke to become better acquainted with themselves and their neighbors, 'bury the hatchet,' forget the political, personal and business squabbles in the past between the Holyoke Water Power Company and our own Municipal Gas and Electric plant.

"Let us not forget that this is a new day, that the men at the helm of these utility organizations are new men and young men. Their deeds would definitely indicate that they are very capable, energetic, honest, conscientious, and well-qualified for the positions they hold. Let us not allow their enthusiasm to run away with them.

"At the present time they could sit down at a table and do some negotiating to the benefit of all Holyoke.

"Why not have the Holyoke Water Power Company be a little more considerate of the price of surplus water furnished the Gas and Electric Department on Sundays and holidays? This is one of many similar intricate questions they can resolve through intelligent and deliberate bargaining. There must be some common ground upon which those power magnates could meet their business problems. With equal service to their employers, we are confident that they also recognize an obligation to function through their own self-organizations in organic cooperation with each other for the best interests of all of us."

The report was signed by Chairman Francis Curran, and by James A. Croke, Edward A. Vanasse, John J. Bresnahan, Michael J. Stevens and Edward M. Moore.

Massachusetts Enters Holyoke Power Hearing

HOLYOKE, Mass. — The Commonwealth of Massachusetts has officially entered the hydro-electric power development controversy in Holyoke, with the recent announcement in Boston that a petition has been filed by State officials seeking leave to intervene in any hearings conducted by the Federal Power Commission.

The commissioner of the State Department of Public Utilities, along with Attorney-General Clarence A. Barnes, in a petition placed before the FPC in Washington, stated:

"Your petitioners understand that the application of the City of Holyoke Gas & Electric Department for a hydro-electric project in the Connecticut River at Holyoke has been set down for a hearing for the purpose of developing the power resources of the Connecticut River. The petitioners have an interest in any determination of the hydro-electric project mentioned in the request of the City of Holyoke."

The petition concludes: "Wherefore, your petitioners respectfully pray leave to intervene and be treated as parties to the proceedings with the right to have notice of and appearing at the taking of testimony, procedure and cross-examine witnesses and be heard in person or by counsel upon brief and all argument, if oral argument, be granted."

Starbuck Elects Tiley As Its President

GREENFIELD, Mass. — Charles A. Tiley, general manager of Starbuck Manufacturing, Inc., makers of paper draperies and other paper products, has been named president of the firm. Mr. Tiley, who has been general manager and vice-president since August, 1947, succeeds the late Herbert Arthur Starbuck, who died recently in New York following a heart attack.

Charles H. Porter, plant superintendent and clerk-treasurer of the corporation, was elected vice-president to succeed Mr. Tiley. Both will continue in their production capacities.

Harkness Argues Tax On Newsprint Unfair

MONTREAL—The sales tax on newsprint used by daily newspapers is discriminatory because there is no similar tax on magazines which compete with newspapers for advertising, D. S. Harkness (Progressive Conservative, Calgary East) said in the House of Commons February 13.

"In fact," he added, "the tax does not apply to newsprint used by week-end newspapers which do not have a news section. On the other hand, week-end newspaper editions with news sections have to pay the tax on all the newsprint used in the edition."

Even comic books and pulp fiction magazines were free of the tax, he said, which was manifestly unfair.

"In addition to its unfairness it has entered into the increased cost of newspapers," he added. "Last year the two Ottawa papers increased their price from three to five cents a copy, and as I remember it, the main reason given was the increased cost of newsprint.

"Newsprint now runs at over $80 a ton. Thus the tax is well over $6 a ton, which is not an inconsiderable item. It has been an important factor in the increase of 66⅔ percent in price the consumer pays in Ottawa for his daily paper."

Mr. Harkness said the sales tax should be eliminated on a wide range of necessary goods, and reduced on others.

Kimberly-Clark Adds To Timber Holdings

MARINETTE, Wis. — The William Bonifas Lumber Company, a subsidiary of Kimberly-Clark Corporation, has purchased a parcel of land in Marinette county, in line with the corporation's policy of establishing permanent forest holdings for pulp management, to assure a supply of pulpwood in future years.

W. J. Brown of Neenah, chief forester for Bonifas, said that more than 300,000 acres of land have been purchased by the company throughout northern Wisconsin and upper Michigan. Selective cutting, combined with the latest methods in forestry practice, will be carried out. No restrictions are being placed on hunting or fishing on the company's property. Efforts are being made when cutting to avoid damage to streams, and thus preserve them for fishing.

Coated Paper Men to Meet at Commodore

NEW YORK—The annual meeting of the Coated and Processed Paper Association will be held in the club suite of the Hotel Commodore on Tuesday, February 24, at 10 o'clock. The meeting will be followed by the usual luncheon.

feature attraction—today's lesson

Education is more stimulating and effective today because pioneer educators have continually introduced new methods and techniques of instruction . . . such as the dramatic use of motion pictures in visualization. In other fields, also, the cumulative effects of continuous pioneering are increasingly evident. Typical is the field of electro-chemical production, in which pioneer research and development work by Niagara has resulted in improved product quality and processing efficiency in scores of industries that use these chemicals. Today, Niagara is "An Essential Part of America's Great Chemical Enterprise."

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A. S. T. M. Sets Date for Its Annual Meeting

DETROIT—The 1948 Annual Meeting of the American Society for Testing Materials, the 51st such session of this national technical organization, is to be held in Detroit the week beginning June 21. During this week there will be some 20 technical sessions, with a large number of technical papers and reports in the field of materials. There will be more than 300 meetings of the Society's technical committees, concentrating their work on standards and research in materials. Throughout the week of the meeting the Society's 8th Exhibit of Testing Apparatus and Related Equipment will be in progress.

One of the most interesting features of the meeting will be the 1948 Edgar Marburg Lecture to be delivered by Dr. Paul Aebersold, Chief of the Isotopes Division, Atomic Energy Commission, Oak Ridge, Tenn. A. S. T. M. President T. A. Boyd, General Motors Research Laboratories, will give the annual presidents address at the Dinner on Wednesday, June 23. A local Committee on Arrangements headed by C. H. Fellows, Detroit Edison Co., is planning a number of interesting features.

Responsibility for the Society's 1,450 standards, specifications, and tests for materials, which are widely used throughout American industry, in fact throughout the world, rests with the 65 A. S. T. M. main technical committees, with upwards of 800 subcommittees and sections. Some 300 of these groups are meeting throughout the week in Detroit, beginning Sunday, June 20. Because of the large number of meetings and heavy registration expected throughout the week, certain committees will be grouped in cooperating hotels.

Displays of testing apparatus and laboratory supplies, all of which are important in evaluating and testing materials and products, will be exhibited during the 1948 A. S. T. M. Apparatus Exhibit at the headquarters hotel, the Book-Cadillac. Every two years the Society sponsors an exhibit, in which there are not only displays by the leading companies in the apparatus industry, but also special research and educational displays sponsored by the Society's committees, research institutes, etc. This exhibit is a splendid opportunity to review the progress that is being made in this field.

Photographic Exhibit — Concentrating on the theme "Materials, Testing and Research," the Photographic Exhibit will feature not only a general section, but divisions in the fields of photomicrography and radiography, these being sponsored respectively by Committees E-4 and E-7. Every two years the Society members, and staffs of member companies, submit prints for competition in this exhibit. Local arrangements are being handled through a special committee of members and their associates who are concerned with photography. This display will also be in the Book-Cadillac.

E. G. PARTRIDGE

Paper Mill Men's Club Elects New Slate

LOS ANGELES — The Paper Mill Men's Club of Southern California, social organization of mill men and representatives, elected a new slate of officers to guide the affairs of the group for the current year, at a special election meeting held last month at the Oakmont Country Club, Glendale.

Gerry N. Madigan of Johnson, Carvell & Murphy was chosen president; Irvin E. Damon of Northern Paper Mills, vice-president; Jack Leiser of Pioneer Wrapper Company, secretary; and Roland Wolf of California Cotton Mills Company, treasurer.

The election was preceded by an afternoon of golf at the beautiful Oakmont course. Since no competition was involved, no winners can be announced, but a good time was had by all.

NAM Names Gould to Distribution Committee

NEW YORK—Harry E. Gould, president Reinhold-Gould, Inc., Manhattan fine paper marketers, was today named to active membership on the Distribution Committee of the National Association of Manufacturers. Morris Sayre, NAM president, made the appointment.

"This will be one of the most important committee activities of the coming year," Mr. Sayre declared. Mr. Gould's "successful marketing experience" is expected to have considerable effect on the work of the distribution group.

Chicago TAPPI Plans Coatings Meeting

CHICAGO—The March meeting of the Chicago Section ot TAPPI (formerly known as The Chicago Professional Paper Group) will be held on Tuesday Evening, March 23, instead of Monday, March 15, the usual third Monday of the month. This meeting has been scheduled as a special demonstration meeting to which visitors to the Chicago Production Show are cordially invited. The program committee of the TAPPI group, headed by Earl Lenz, chairman, has arranged an especially interesting bill for the after-dinner portion of the meeting. The general subject of the evening's program will be "Developments in Coatings, Impregnants and Saturants for Papers."

J. H. Carter, sales manager of the Nashua Gummed and Coated Paper Co., Nashua, New Hampshire, will discuss "Heat Seal" or thermoplastic papers. Mr. Carter will have with him a small demonstration machine and numerous samples of heat-treated papers.

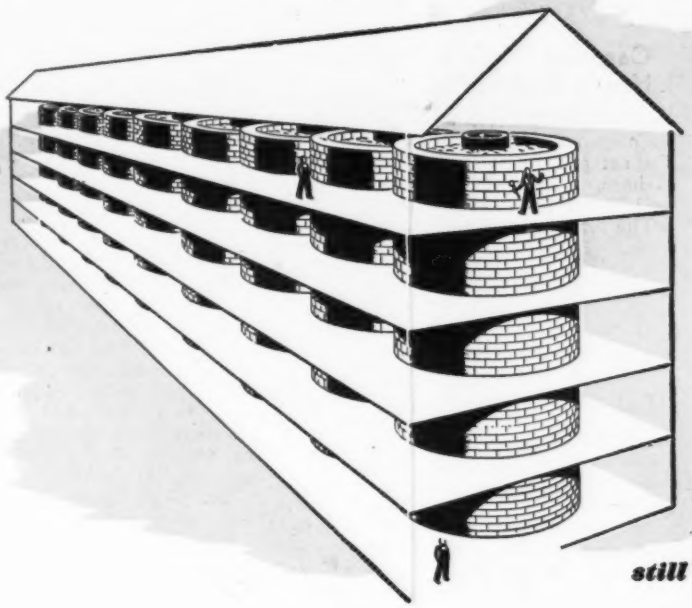
E. G. Partridge, Director of Research for the American Anode, Inc. of Akron, Ohio, will talk about "Latex Compounds for the Paper Industry." His discussion will cover Latex types, handling and compounding of materials, methods of application to paper, impregnation saturation and coating; properties desired and results obtainable; and specific commercial applications and current problems of the industry. Mr. Partridge will be assisted in his presentation by Mr. R. T. Henson, an expert in the paper field from the technical department of his company.

The Chicago Technical Societies Council is composed of 51 of the technical, engineering and scientific societies and associations in Chicago, and the Chicago Production Show is an annual activity devoted to the furtherance of the joint interests of all of the members of the various member societies.

This meeting has been scheduled to provide visitors to the Production Show who are interested in the paper and allied industries an opportunity to gain first hand knowledge of the operation and scope of the Chicago Professional Paper Group, known officially as the Chicago Section of TAPPI.

Dinner will be served at the usual meeting place, The Chicago Bar Association dining room, on the twelfth floor, 29 South La Salle St., at 6:30 P.M. The usual price will prevail, $2.75 for members and $3.00 for guests and non-members. Out-of-town visitors who are desirous of attending may obtain their advance reservations by addressing Mr. S. A. Feiss, treasurer, Chicago Tappi Section, c/o Arrco Playing Card Company, 310 South Racine Ave., Chicago, Illinois.

locked up *NINE years in*



NINE towers . . .

still hale and hearty

PENNSALT CEMENTS

Back in 1938, a large Great Lakes paper mill installed six chlorination towers and three bleachers. The chlorinators were lined with two courses of tile . . . the joints raked and pointed with Pennsalt's Asplit Cement.

The bleachers were similarly lined, but the joints were pointed with Pennsalt's Causplit Cement.

Here are the operating conditions:

CHLORINATORS	BLEACHERS
8400# stock	8400# stock
Cold	120°F.
2½—3% Chlorine (pulp basis) at 4% consistency	0.75% caustic (pulp basis) at 12% consistency

When last checked, about a year ago, the Pennsalt Cements were found to be in excellent condition in all 9 towers. Both Asplit and Causplit Cements had withstood respectively the acid and caustic conditions. Perhaps there's a moral in it for you. Our corrosion engineers will be glad to go into details with you. Just write Special Chemicals Division, Pennsylvania Salt Manufacturing Company, 1000 Widener Building, Philadelphia 7, Pa.

PENN SALT

CORROSION-RESISTANT CEMENTS

FINANCE

Package Machinery Reports Sales Up

EAST LONGMEADOW, Mass.—A million-dollar increase in sales and constant progress in all other departments were the highlights of the annual report made by President George A. Mohlman to stockholders of the Package Machinery Company, at the recent annual meeting held at the plant.

Other important developments were the election of a new executive committee comprising President Mohlman; Roger L. Putnam, chairman of the board, and Roe S. Clark, treasurer, and the election of Haldimond S. Putnam, Jr., as assistant treasurer of the company.

In his report to stockholders, President Mohlman said that the company had made constant progress since moving from its old plant in Springfield to the factory in East Longmeadow which it purchased from the War Assets Administration.

"Progress came through changes that have vindicated the judgment of your management," Mohlman declared.

Production is three to four times greater now than it was in the old plant; new machines—for the packaging of numerous items from fresh vegetables and bubble gum to cut flowers—have been introduced; engineering progress has been made with the production of new-type cigarette-wrapping machines, and "several new developments, which cannot be revealed at this time" are in the works.

Under the guidance of Treasurer Clark, the company's net working capital increased $551,735, Mohlman reported, and after absorbing expenses incurred in moving, amounting to $244,665, and after taxes, the net profit amounted to $447,796.

Dividends of $71,552 were paid on

(Continued on page 26)

Canadian Hinde & Dauch Nearly Doubles Net

TORONTO—Hinde and Dauch Paper Company of Canada reports for 1947 a net profit of $935,347, or $3.11 per share, compared with $536,796, or $1.79 per share, in the previous year. The increase in the total was 74.4 percent. Balance sheet figures show net working capital of $1,671,390 as compared with $2,766,602 at the close of the previous year, current assets as of Dec. 31 last appearing at $2,477,046 and current liabilities at $805,656.

Ewing Mills Pays Bonus

ORANGE, Mass.—Erving Paper Mills has paid a bonus to all workers who have been employed a month or more at the Orange and Erving divisions. The bonus will vary from a 15-hour pay to those employed from one to six months, up to 10½ percent of last year's earnings to those employed ten years and over.

Gaylord Declares on Common

NEW YORK—The Board of Directors of Gaylord Container Corporation last week declared a dividend of 37½ cents a share on its Common Stock payable March 10, 1948 to shareholders of record March 1, 1948.

Boyer Decision Held Of Basic Import

TORONTO—When last week in Quebec Superior Court Mr. Justice Boyer refused to approve a reorganization plan of a St. Lawrence group of companies, he set what many see as a new pattern that will be of outstanding interest to all who contemplate reorganizing capital structures in the future.

Mr. Justice Boyer stressed the important principle that capital reorganizations under Section 122 of the Dominion Companies Act are "in the nature of a compromise where each class makes some sacrifice of its rights and privileges and must be substantially fair." That is to say, all the sacrifice should not be borne by any one class of security holders, particularly if they hold preferred position.

In some reorganizations of the past few years, holders of preferred stocks have been persuaded to give up part of their claims for dividend arrears on the ground that it would be taken away from them through taxation anyway. As a result of Mr. Justice Boyer's decision there may be some doubt as to whether such a scheme would be approved in the future.

Hereafter, company directors will have to go into more detail as to the effects and probable effects of proposed changes in capital structure and even then they will never know what will get the approval of the courts and what will not, after all classes of security holders have given approval.

The most far-reaching result of the recent decision may be the trend to fuller disclosure of information such as directors' holdings, up-to-date information on profits and profit possibilities. The difficulty, however, may

(Continued on page 28)

FINANCIAL RECORD OF THE WEEK

New York Stock Exchange

High, Low and Last for Week Ending February 14, 1948

STOCKS

	High	Low	Last
A. P. W.	4⅝	4¼	4¼
Armstrong Cork Co.	43½	41¾	42½
Armstrong Cork Co., pf.	89½	89¼	89½
Celotex Corp.	24⅞	22⅞	24
Celotex Corp., pf.	19⅞	19⅜	19⅜
Certain-Teed Products Corp.	15	13⅜	13⅞
Certain-Teed Products Corp., pf.	....	....	....
Champion Paper & Fibre Co.	18⅞	18⅜	18⅞
Champion Paper & Fibre Co., pf.	....	....	....
Congoleum Nairn Co.	29⅜	28¾	29¾
Container Corp. of America	37½	35½	35¾
Container Corp. of America, pf.	94¼	94¼	94¼
Crown Zellerbach Co.	28¾	27¼	27⅜
Crown Zellerbach Co., pf. 4.20	95	91⅞	91⅞
Crown Zellerbach Co., 4 pf. 4	105½	103½	103½
Dixie Cup Co.	31	30¾	31
Dixie Cup Co., A	50	50	50
Flintkote Co.	33⅝	31⅝	32¾
Flintkote Co., pf.	99½	99½	99½
Robert Gair	8¼	7⅜	7⅝
Robert Gair, pf.	19	19	19
International Paper Co.	47⅜	44¾	44⅞
International Paper Co., pf.	91¼	89⅞	89⅞
Johns-Manville Corp.	36	34¼	35
Johns-Manville Corp., pf.	102⅞	100½	100½
Kimberly-Clark Corp.	20⅝	19	19⅛
Kimberly-Clark Corp., pf.	97	94	94
Mac Andrews & Forbes	37	36¼	36¼
Mac Andrews & Forbes, pf.	142	142	142
Marathon Corp.	20¾	19½	19½
Mead Corp.	18½	16⅞	17⅝
Mead Corp., pf. 4¼	89¼	89	89
Mead Corp., pf. 2	....	....	....
National Container Corp.	12⅝	11⅜	11⅞
Paraffine Companies, Inc.	67¼	67¼	67¼
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	25¼	22⅝	23¼
Rayonier, Inc., pf.	31½	31⅛	31¼
Ruberoid Co.	58½	55	55¾
St. Regis Paper Co.	9	8	8⅛
St. Regis Paper Co., pf.	80¼	79½	79½
Scott Paper Co.	43	42½	42½
Scott Paper Co., pf.	93½	91	93½
Sutherland Paper Co.	40	39¼	39⅜
Union Bag & Paper Corp.	30⅝	27⅝	28⅜
United Board & Carton	13	12¾	12½
U. S. Gypsum Co.	95¼	92½	94½
U. S. Gypsum Co., pf.	172	172	172
United Wallpaper	5	4⅝	4¾
United Wallpaper, pf.	....	....	....
West Virginia Pulp & Paper Co.	43	38¾	38¾
West Virginia Pulp & Paper Co., pf.	103	103	103

BONDS

Celotex Corp., 3½s '60	99⅛	99	99⅛
Certain-Teed Products Corp., 5½s '53	....	....	....
Champion Paper & Fibre Co., 3s '65	....	....	....
Mead Corp., 3s '68	....	....	....

New York Curb Exchange

High, Low and Last for Week Ending February 14, 1948

STOCKS

	High	Low	Last
Great Northern Paper Co.	41⅞	41	41
Taggart Corp.	10½	10¼	10½

. . . with MANHATTAN RUBBER COVERED ROLLS

Rubber covered rolls can affect production costs in paper making from two angles. The *quality* of the paper depends on the surface condition of the rolls. The *quantity* of paper produced depends on how often the machine is shut down for reconditioning or recovering rolls.

You get important extra advantages when you order your rolls "MANHATTAN rubber covered". Facilities in the Manhattan mills accommodate the largest rolls. Machines of the latest design precision grind roll surfaces to micrometer exactness. Men with *decades* of experience control quality at every stage. Rolls are shipped to you carefully boxed with instructions for storing and handling.

Once on the job, Manhattan Rubber Covered Rolls insure highest quality control. Coverings adhere inseparably to metal shell . . . will not oxidize or harden . . . are virtually free of corrugating or checking . . . resist abrasion and acidity.

In short, Manhattan rolls give you the longest run for your money . . . and your "paper" profit grows.

PLANTS AT PASSAIC, N. J. . . . NEENAH, WIS. . . . NORTH CHARLESTON, S. C.

RAYBESTOS R M MANHATTAN

RAYBESTOS-MANHATTAN INC.

Keep Ahead with Manhattan

MANHATTAN RUBBER DIVISION **PASSAIC, NEW JERSEY**

Commerce Dept. Seeks World Market Gauge

WASHINGTON — Taking cognizance of the interest of United States manufacturers in the export market for paper and related products, the Forest Products Division of the Office of International Trade, Department of Commerce, has just circulated to U. S. foreign service officers a set of special instructions for reporting on the foreign markets for such American products in their areas abroad.

"United States manufacturers and exporters of pulp, paper and converted paper products are displaying keen interest in possible future world-market outlets," the division stated in its instructions. "It is believed that general industrialization, greater literacy and education, and other factors in many countries will greatly increase the demand for pulp and paper products. This, in turn, may result in increased domestic production in these countries, but at the same time a large import trade will probably be sustained."

Pointing out that despite world-wide consumption of paper and paper products "in only a few cases does the domestic paper production of a country meet all consumption requirements for various grades and qualities," the Forestry Division continues:

"Paper consumption in any given country is closely related to its degree of industrialization and social progress. Paper consumption in a country is a good barometer of the degree of literacy and education, since demand for printed matter, as well as industrial products is greater in countries where such social advances are evident.

"Thus we find the per capita consumption of paper in the United States amounting to over 300 pounds per person in 1941, as compared with a per capita consumption of less than one pound in some countries.

"For many years," the statement points out, "the United States has been the world's largest manufacturer of wood pulp and paper and also the world's largest importer of wood pulp and paper. On the other hand, its export trade has been small, as compared with that of such important pulp-and-paper manufacturing countries as Sweden, Finland, Norway and Canada.

"In tonnage, United States exports of pulp and paper, exclusive of paper and paperboard products, represents only 2 to 3 percent of production. In spite of this, the United States export trade in pulp, paper and paper products is of considerable importance, and the future appears to hold in store even greater possibilities. In the five-year period 1935-39 United States sales abroad of paper base stocks and paper manufactures averaged about $40,000,000 a year."

The instructions are designed to enable U.S. foreign service representatives to prepare a broad economic appraisal of current developments and trends which may influence the pulp and paper market and to obtain specific details on domestic manufacture and marketing practices in their observation. Some of the general headings, with suggested details, in the outline for reporting include: Consumption Trends, Commercial and General Industrial Uses of paper and related products; New Use developments; printing and general industrial trends; Domestic Production; information on mills and various statistical information, regulations governing entry of paper products, trade channels, and many related matters which may assist an exporter in developing the market.

Schulkind Sails on South American Trip

NEW YORK—The executive and New York sales staff of E. P. Lawson Company, Inc., manufacturer of paper cutters and bindery equipment, sponsored a surprise party on Thursday evening, February 5, at the Hotel Lafayette for D. W. Schulkind, president of the firm, and Mrs. Schulkind, who sailed on a six weeks' trip to South America, sailing on February 12 on the *S. S. Uruguay* of the Moore-McCormack Lines.

Mr. and Mrs. Schulkind plan to visit Rio de Janeiro, Buenos Aires, Montevideo, Sao Paulo and Santos. During his trip, Mr. Schulkind will confer with many South American distributors of Lawson equipment, will visit local plants and study the South American paper cutting and bindery operations.

Schulenberg Talks On Public Relations

NEENAH, Wis.—M. J. Schulenberg, special assistant to the president of Kimberly-Clark Corporation, addressed 40 members of the Badger-Globe Foremen's club at a dinner meeting Monday evening, February 9, at Hotel Menasha. He discussed "Some General Aspects of a Public Relations Program."

He stressed the basic part played by foremen in keeping Kimberly-Clark a good company in the eyes of the employe, customer, stockholder and community.

Reports were given by Lester Johnson for Harry Nelson, program committee chairman; Ed Miller, advisory committee; Kenneth Buesing, membership; Norbert Hecker, finance; Sylvester Demerath, entertainment; and Phil Gaertner, publicity. The next meeting will be held March 8.

Gilmore Enters Agency Field

BOSTON — L. Donald Gilmore, formerly advertising manager of Dennison Manufacturing Company, Framingham, Mass., has joined the staff of Badger & Browning, Inc., an advertising agency, Boston, as service manager.

Franc's Value Seen As Spur to Exports

The devaluation of the French franc for the purpose of increasing the available supply of dollars in France will have repercussions on all grades of paper which can be shipped from that country, according to a report by Warren B. Bullock Manager of the Import Committee of the American Paper Industry. By the devaluation such papers as are made in France can be sold at about half the present prices, at least until the export and the home-use franc values come closer to each other. The prospect is that some French export prices will rise. The United States Tariff Act, however, may be used to apply extra duties on French merchandise. The law provides that duties shall be computed on the price in the country of origin and this would seem to be the value in the home-use franc. With the possibility that there may be two other standards for the valuation of the franc, the official market and a free market which is also authorized, the complications in computing duty rates will be increased. Normally, duties are computed on the basis of the official value of currency on the date of export, but the manner in which the new French Government regulations are phrased will determine the procedure of the American Bureau of Customs.

A bill has been introduced in Congress to extend for two years the provision of the amendment to the Tariff Act by which paper in rolls under 15 inches in width will be duty free as standard newsprint paper. The amendment passed last year provided that paper of standard newsprint quality in rolls from 15 to 9 inches in width could be imported duty free as standard newsprint until July 1, 1948. The original provision was rushed through Congress without an opportunity for the domestic industry to be heard.

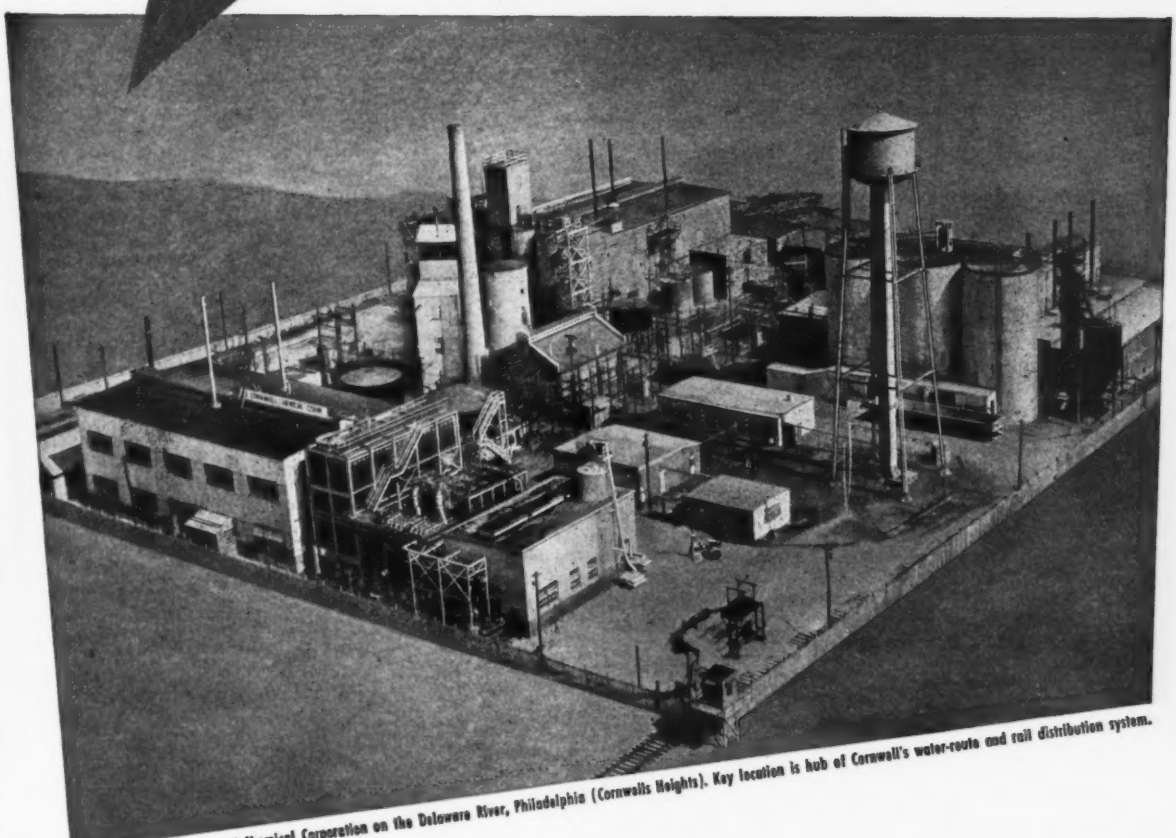
Bible paper from England assessed for duty at 5 cents per pound and 15 percent, claimed to be dutiable at 7½ percent, has been held by the United States Customs Court to be bible paper weighing over 10 pounds per ream, dutiable at 2 cents per pound and 20 percent.

Sadtler Firm Opens Enlarged Laboratory

PHILADELPHIA—Fifty-seven year old Samuel P. Sadtler & Son, Inc., opened its enlarged laboratories at 2100 Arch Street, Philadelphia 3, on February 16. The laboratories have long been known for their general consulting, research, and referee analytical chemistry. The addition of new services has necessitated this change. Some of the new services are: organic, inorganic micro chemical laboratories, biochemical and bacteriological laboratories, and an absorption spectral laboratory.

SALT CAKE

.....paper makers' grade



Plant and Laboratories of the Cornwell Chemical Corporation on the Delaware River, Philadelphia (Cornwells Heights). Key location is hub of Cornwell's water-route and rail distribution system.

Cornwell Chemical Corporation

CORNWELLS HEIGHTS (PHILADELPHIA), PA.

Telephone: Torresdale (Phila.) 4-7358 Cornwells 0302 Cables: SEECHEM

Williams Merges Its Subsidiary Interests

EASTON, Pa.—To serve the trade more effectively, C. K. Williams and Company and eight of its subsidiaries will be consolidated, effective March 1, under the new corporate name of C. K. Williams & Company. The constituent companies are Geo. S. Mepham Corporation, East St. Louis, Blue Ridge Oxide Company, Lehigh Gap, Pa.; Calcium Chemical Corporation, Adams, Mass.; Point Milling & Manufacturing Company, East St. Louis; Seminole Pigment Company, Warren, Ohio; The Sulphiro Company, Inc., Martins Ferry, Ohio; Synthetic Iron Color Company, Richmond, Calif.; C. K. Williams & Company of California, Ltd., Emeryville, Calif., and C. K. Williams and Company, Easton. Executive offices will be located at the East St. Louis plant.

Officers of the new corporation are men who have been associated with these companies for periods ranging from nineteen to thirty-five years. They are M. R. Williams, chairman of the board and treasurer; L. K. Ayers, president; J. W. Ayers, R. W. Dodson, Verne Frazee, J. W. Schlosser and T. K. Stinson, vice-presidents, and E. G. Davies, secretary.

Offices will remain at the several plant locations in Easton, East St. Louis, Emeryville, and Warren. Additional sales offices are located in Atlanta, Chicago, Detroit, Montreal, Boston, Cincinnati, Los Angeles, New Orleans, Toronto, Brooklyn, Cleveland, Milwaukee, and St. Paul.

Sales Personnel will remain unchanged, and will continue to be directed by present division managers, as follows; John Sellon, Easton, W. D. Nichols, East St. Louis, John S. Googins, Emeryville. The coordinating of sales to concerns operating nationally will be covered by W. N. Crumpler.

C. K. Williams and Company was organized in 1878 by C. K. Williams and his father, Joseph T. Williams. The firm engaged only in the production of powdered soapstone during the early years of its existence. The first venture in the production of pigments was confined to the grinding of a few iron ores, which occurred in small deposits in the neighborhood of Easton. The business was expanded gradually by the purchase of ore-bearing properties in Pennsylvania and New Jersey, and more distant points; also by importing ochres from France, siennas from Italy, red iron ore from Persia and Spain, and umber from Cyprus.

Early in the 1900s, the production of synthetic oxides was undertaken. C. K. Williams and Company established a research program and with improved products was able to expand its markets beyond sales to the paint industry—its principal outlet. Its pigments were then introduced successfully to manufacturers of building products, glass, ceramics, leather finishes, linoleum, mastic floor tile, paper, polishing rouge, rubber, wallpaper, and of a number of specialties in the chemical and electronic fields.

Worthington Buys Welding Wing

HOLYOKE, Mass.—The Worthington Pump and Machinery Corporation has taken title to the large weldery and foundry addition built during the war by the federal government on the Worthington property off Winter Street.

These two purchases will add several thousands of dollars to the city's property valuation. While under government ownership, they were exempt from local taxation.

The weldery is a one-story building of corrugated steel construction measuring 300 by 430 feet. This totals 129,000 square feet of floor space. The foundry is of brick and steel construction measuring 50 by 80 feet, or 4,000 square feet of floor space.

The buildings were started in October, 1941, and were finished in the spring of 1942. They provided the necessary floor space for the then expanding Worthington war production program, and were fully utilized during the war.

Building permits at that time showed the value to be well over the $100,000 mark. The purchases from the government, completed recently, were at prices considerably below that figure.

Eagle Lodge Lifts Holyoke Boycott

HOLYOKE, Mass. — The boycott placed by the Eagle Lodge of Papermakers against the Holyoke Wire Cloth Company, of this city back in April, 1946, is to be rescinded. This is a secondary boycott and is held to be illegal under the terms of the Taft-Hartley law.

The Holyoke Wire Cloth company, is an open shop, and the Eagle Lodge cracked down on it nearly two years ago, forbidding Holyoke papermakers to work on the wire cloths of the company. That barred the Holyoke Wire Cloth Company, from making any sales to local paper mills, inasmuch as they are organized.

Durkin Again Heads Hudson Falls Local

HUDSON FALLS, N. Y.—Thomas E. Durkin was re-elected president of the local branch of the International Brotherhood of Papermakers at a recent meeting. Other officers chosen include William Murphy, vice president;; William Wakely, treasurer; Lester Lacross, financial secretary; Laura Fuller, recording secretary; Jay Belisle, William Lewis and Maurice Clear, trustees. The officers were installed by Joseph Tonella, international vice president.

Mando Sponsors Unit In Engineer-Forestry

MINNEAPOLIS — Donald D. Davis, president of the Minnesota and Ontario Paper Company, reported last week that Mando will sponsor an Army affiliated Engineer-Forestry Battalion, Headquarters and Headquaters Company. The unit, Mr. Davis stated, will be organized and located at International Falls and will be the headquarters for similar units organized in other bordering states. Signing of an affiliation agreement is an expression of cooperation on the part of Mando with the War Department to encourage peace-time service groups composed of technically trained men from within industry, explained Mr. Davis.

This affiliation agreement to carry out a program directed at the availability of an effectively organized affiliated engineer-forestry unit was signed by Mr. Davis and Colonel F. L. Beadle, representative of the Chief of Engineers, United States Army.

Steps to activate Mando's Battalion Headquarters Company will start immediately. It will be organized under the supervision of the Minnesota state senior instructor for Organized Reserves, Colonel Raymond R. Tourtillott.

Mr. Davis has previously announced that employees of the Minnesota and Ontario Paper Company belonging to military reserve organizations will be granted two weeks leave per year for training purposes without impairing their other vacation benefits. In addition to granting the training leaves for such reservists, the company policy is to make up the difference between the employee's regular two weeks earnings and that which he receives from his military organization.

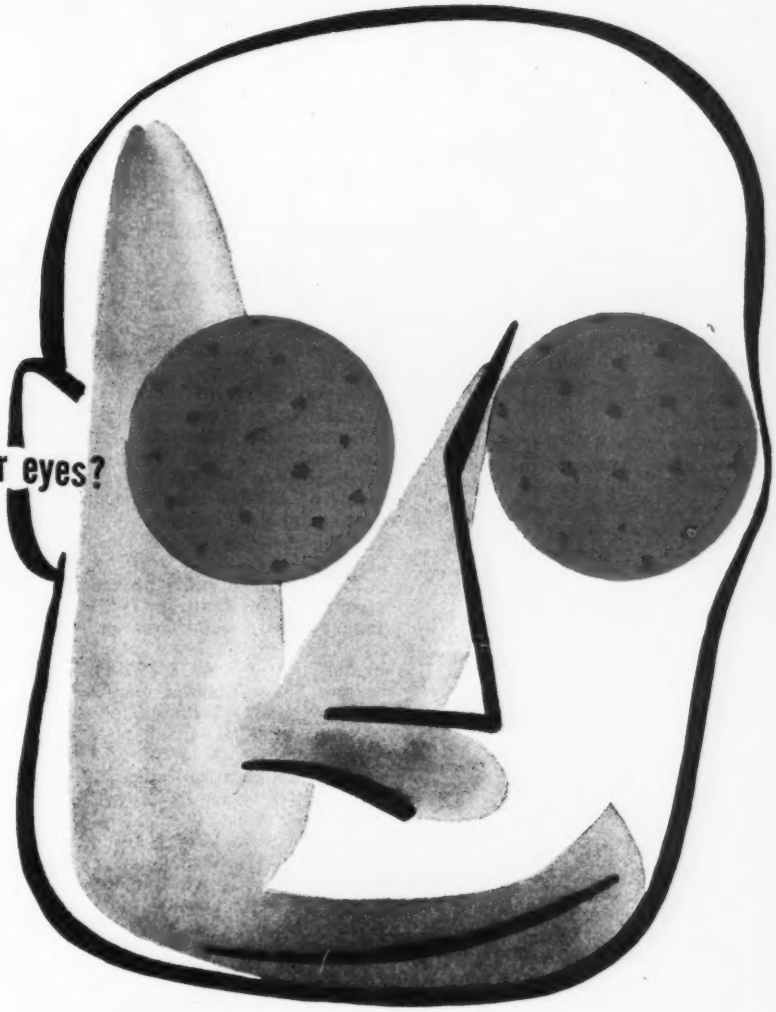
Neenah Juniors View Woods Plan

NEENAH, Wis. — Motion pictures of logging operations at Kimberly-Clark Corporation's plant at Kapuskasing, Canada, were shown by Lyle Argetsinger of the woodlands division at a meeting of the juniors of Neenah Boys Brigade Monday evening, February 9. Argetsinger also spoke about forestry as a vocation.

Finch, Pruyn Re-elects

GLENS FALLS, N. Y.—The annual meeting of Finch, Pruyn & Company was held here recently at which officers and directors for the year were re-elected. The re-elected officials are Maurice Hoopes, president; Harold F. Bullard, Samuel Pruyn and Lyman A. Beeman, vice presidents; Fred B. Chapman, treasurer, and H. F. Bullard, secretary. The officers with Helen E. Foulds, Nellie M. Howe and Louis P. Brown comprise the board of directors.

ever have spots before your eyes?



paper makers, you can stop pitch troubles this year before they begin.

Spotted paper, plugged screens and wire, stuck paper on drying rolls and dry cans, can all be eliminated with Monsanto's Mertanol 7L.

This synthetic organic sulfonic acid product gives *two-way* control over pitch problems growing out of green or unaged wood:

- by helping to keep pitch dispersed
- by absorbing pitch physically

Before pitch troubles start this season, why not clip the handy coupon below for full Mertanol 7L information? Mertanol: Reg. U. S. Pat. Off.

MONSANTO
CHEMICALS — PLASTICS

SERVING INDUSTRY . . . WHICH SERVES MANKIND

Monsanto Chemical Company
Merrimac Division, Boston 49, Mass.

Please send me full information on Mertanol 7L for pitch control.

Name..... Title.....

Company.....

Address.....

City..... State.....

Fear Flood Danger in Connecticut Valley

SPRINGFIELD, Mass.—Fears of paper manufacturers in the Connecticut Valley that record piles of snow in this area might result in a serious flood this spring have been allayed somewhat by officials of the Hartford Weather Bureau, who say they do not, at this time, anticipate any serious threat on the Connecticut River.

Some of the smaller tributaries that flow into the Connecticut may overflow their banks, weather bureau authorities said, but Hartford officials do not look for anything serious on the Connecticut unless some abnormal condition arises, such as a sudden thaw accompanied by extremely heavy and prolonged rains.

Reason for their belief, they said, was that snow depths in the northern watershed are still normal. There is more snow in the Springfield area than there is in some northern sections of Vermont and New Hampshire, and it is that area that must be watched, not the immediate locality.

However, to be on the safe side, Army engineers will determine whether Connecticut Valley flood control works will be able to withstand a heavy spring freshet when they make a periodic inspection later this month to determine what repairs, if any, will be necessary to the dikes and canals, according to H. J. Kropper, chief of the flood control branch of the U. S. Army Engineers.

"We are constantly on the alert for any repairs to the flood control system," Mr. Kropper said, "and have made periodic inspections of the entire system from Hartford through Northampton, covering Hadley and Hatfield."

Mr. Kropper made it clear that the engineers are aware of possible damage to the system during the winter months, and said that his office is in touch with the situation every month of the year.

In the inspection slated for later in the month, the possibility of high water from the heavy snowfall will be taken into consideration in making recommendations, he said.

"I shall see that Springfield receives a complete report of the condition of the dikes," he said. "It will then be up to the city to make any repairs that are necessary."

The city budget for 1948 contains an appropriation of $10,000 to carry on any needed repairs.

Huyck Stages Dinner to Honor Veteran Employes

RENSSELAER, N. Y.—A testimonial banquet for several hundred employes of F. C. Huyck & Sons with the firm for fifty-five years or more was held recently at the Dewitt Clinton Hotel. Certificates of service were presented to thirty-five employes who qualified as members of the service group with twenty-five years or more with the firm. Mrs. Edmund N. Huyck and Mrs. Katherine Huyck Elmore, of New York, daughter of Francis C. Huyck, represented the founder's family as guests of honor. Francis H. Eldridge, president of the company, addressed the gathering.

Newsprint Output Sags in January

NEW YORK — Newsprint production in Canada during January 1948 amounted to 371,637 tons and shipments to 346,870 tons, according to the News Print Service Bureau. Production in the United States was 65,094 tons and shipments were 65,037 tons. The output in Newfoundland was 28,198 tons and shipments were 25,637 tons making a total North American production of 464,929 tons and shipments of 437,544 tons, compared with continental production of 470,841 tons and shipments of 436,968 tons in January 1947.

The Canadian mills produced 1,637 tons more in January 1948 than in January 1947, which was an increase of 0.4 percent. The output in the United States was 3,540 tons or 5.2 percent below than in January 1947; in Newfoundland production was 4,009 tons or 12.4 percent less, making a net decrease of 5,912 tons, or 1.3 percent less than in January 1947.

Stocks of news print at the end of January were 69,330 tons at Canadian mills, 8,358 tons at United States mills, and 51,403 tons at Newfoundland mills, making a combined total of 129,091 tons compared with 101,706 tons on December 31, 1947, and 195,615 tons at the end of January 1947.

Hoosick Falls Installs Its Slate for 1948

HOOSICK FALLS, N. Y.—The officers of the local branch of the International Brotherhood of Papermakers were installed recently at a meeting here presided over by Joseph Addy, secretary-treasurer, who was accompanied by Ralph Brewster, a director of the regional branch at Utica. Officers installed included Clarence Baker, president; Joseph Miller, vice president; Ernest Rehberger, financial secretary; Alfred E. Eberle, recording secretary, and William Ketchum, treasurer. A social session followed at which addresses were delivered by L. P. Yandell, president, and S. R. Fiffield, superintendent, of the Wood Flong Corp.

Kimberly Foremen Dine

KIMBERLY, Wis. — The Foremen's club of the local mill of Kimberly-Clark Corporation held a dinner meeting at the clubhouse Monday evening, February 16. The principal speaker was Albert Millar, a member of K-C's woodland division staff at Neenah.

Springfield Breaks Freight Car Tie-Up

SPRINGFIELD, Mass. — Several hundred critically-needed freight cars that have been tied up in railroad yards here and in West Springfield for some time as a result of a series of crippling snow storms have been freed, according to rail officials, and most of the cars are now on their way to other sections of the country.

Spokesmen for the Boston & Albany Railroad said that several hundred cars were tied up in its yards off and on for the last several weeks. The worst condition prevailed in the West Springfield yards, B. & A. officials said. The Liberty-Street yards were fairly clear. Most of the cars were empties.

New Haven Railroad officials likewise said they had several hundred cars tied up in their Columbus-Avenue yards. They added that the combination of ice, snow and high drifts also was responsible for some minor derailments which, although cleared up quickly, nevertheless caused additional delays.

Both railroads were forced to hire large crews of snow shovelers to clear the freight yards and release the snowbound cars.

Another difficulty that hit the railroads during the extreme cold weather was the freezing of coal. It was reported that some engines were forced to lay over several hours here on some nights while crews broke up the frozen coal.

Mohican Branch Installs Officers

GLENS FALLS, N. Y.—The Mohican branch of the International Brotherhood of Papermakers held its annual banquet here recently at which officers for the year were installed. The officers installed are Albert Tracy, president; Robert Hart, vice president; Glen W. Wood, financial secretary and treasurer, and Edward Demers, recording secretary. The affair was attended by about 70 members and guests.

Among the guests were Ralph Brewster, an official of the International Brotherhood of Papermakers; Samuel Pruyn, vice president of Finch, Pruyn & Co.; H. F. Bullard, Lyman A. Beeman and Arthur Mosher, mill superintendents; William Gilday, assistant superintendent; W. J. Wetherbee, production and sales department; R. I. Wynne-Roberts, chief engineer; Louis Valley, employment department, and Robert D. Moynihan, chemist and beater room superintendent. The toastmaster called on all the guests and their responses included discussion of the progress of the conversion program to specialty ground wood papers; increased production represented by a new record in 1947 and the very favorable position of the firm for the future.

Now— A LOW-COST SOFTENING AGENT

➧➧ that makes paper resist fire, too!

Helps you make better

PAPER DRAPERIES
PAPER NAPKINS
PAPER TOWELS
PAPER TABLECLOTHS
TISSUE PAPERS

and many other

PAPER PRODUCTS

Now you can soften your paper products more effectively . . . add fire retardance at the same time . . . by using an Amine Sulfamate made with Du Pont Sulfamic Acid. You just add the desired amine to the Sulfamic Acid and apply the resulting Amine Sulfamate to the paper. It can be applied at any stage after the drying operation at the mill.

Amine Sulfamates provide excellent softening, even at low humidities, because they do not depend entirely on water pick-up for their action. Yet, their softening action is effective over the whole humidity range. And at the same time, Amine Sulfamates make the sheet fire-retardant.

Color Stability

When suitable modifying agents are used in the process, the treated paper has excellent color stability on exposure.

In "Fadometer" tests, papers treated with an Amine Sulfamate and modifying agents show complete absence of yellowing, even after a 320-hour exposure.

Economical . . . Easily Applied

Du Pont Sulfamic Acid is inexpensive. When added to amines, it can be evenly applied by either immersion or spray treatment. Amine Sulfamates can also be applied by adding them to coating compositions, or during many paper converting operations.

Du Pont technical representatives are available upon request to advise you on how Du Pont Sulfamic Acid and amines can help you to produce better paper. For further information and samples of Sulfamic Acid, write E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Department, Wilmington 98, Delaware.

Where flameproofing without softening action is required, the regular Du Pont Fire Retardants are recommended.

DU PONT SULFAMIC ACID

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BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

Honolulu Paper Firm Organizes in Maui

HONOLULU, T. H. — Stanley S. Taylor, president and general manager of the Honolulu Paper Company, Limited, of Honolulu reports the incorporation of the Maui Paper Company, Limited. Kahului, Maui, as of January 20, 1948. The Maui Paper Company has been incorporated for $100,000 with the privilege of extending its capitalization to one-half million dollars.

The officers are: Stanley S. Taylor, president; C. T. Oliphant, first vice-president; T. H. "Hod" Mullen, second vice-president and general manager; D. M. MacArthur, treasurer; Wm. H. Balthis, assistant treasurer; Merryl C. Shaver, secretary. The officers, together with E. Stanley Elmore, constitute the board of directors. Cameron & Johnstone were elected auditors.

The Maui Paper Company, Limited, purchased the paper inventory as of January 2 of the Maui Dry Goods & Grocery Company, Ltd., thereby terminating the sales agreement between Honolulu Paper Company and Maui Dry Goods & Grocery Company, Ltd., that existed heretofore.

The controlling interest is held by the Honolulu Paper Company, Limited, and a good share of the balance of the stock has been sold to residents of the Island of Maui.

Mr. Mullen, second vice-president and manager, is a paper man of long standing. He started in the paper business in the mills of Wisconsin in 1919 and has been closely associated with the paper business ever since, with the exception of about four years of government service during the war, and following VJ Day was with the War Assets Administration as director of sales in Honolulu.

On January 24 C. T. Oliphant, vice-president of the Honolulu Paper Company, went to Maui where he presided at the organization meeting of the stockholders and the original meeting of the directors of the Maui Paper Company.

The Maui Paper Company, Limited, will handle for the Island of Maui all of the lines of the Honolulu Paper Company, Limited, and are operating temporarily from the paper warehouse of the Maui Dry Goods & Grocery Company located in Kahului. Their permanent location will be the former Fourth Marine Operating Base between Kahului and Wailuku, the corporation having entered into a leasing agreement with the Kahului Railroad Company for the necessary number of Quonset warehouses needed.

Lakeview Supervisors Dance

NEENAH, Wis.—The Lakeview Supervisors' club entertained at an informal dinner dance Saturday evening, February 7, at the Ahearn Hotel at Oshkosh as the major winter social event of the organization. An instrumental trio provided entertainment.

Port Alice Mill Sets Low Accident Rate

PORT ALICE, B. C.—A new low record for industrial accidents in the pulp and paper industry of the Province of British Columbia was set in the Port. Alice plant of the British Columbia Pulp & Paper Company Limited during the year 1947. From a high frequency rate of 80.29 in 1944 to a low of 9.06 in 1947 is undoubtedly a remarkable achievement, and according to Ed Tucker, safety director at the plant, this record was made possible only with the active support and cooperation of company officials, Plant Manager P. McGhee, the supervisory staff and the employees themselves.

The pulp and paper industry in the Province have been working together for almost three years in an effort to reduce accidents in the individual plants. Safety directors together with personnel representatives from Pacific Mills Ltd., Powell River Company Ltd., Sorg Pulp Company, Westminster Paper Company Ltd., and the British Columbia Pulp & Paper Company Ltd. have met every six months as members of the British Columbia Pulp & Paper Industry Safety Association to discuss ways and means of reducing the toll of accidents in the industry. The fact that the cumulative frequency rate for the industry was reduced from 43.63 in 1946 to 26.08 is indicative of the results being obtained.

WYATT DICK

who has been named by Kenwood Mills Limited, Arnprior, Ont., to its felt sales department. Mr. Dick is well acquainted with the pulp and paper industry in Canada, having served with the Norton Company of Canada for the past six years. Previously he was employed for many years with the Spruce Falls Power and Paper Company, Kapuskasing, Ont., in various operating capacities.

Reinhold-Gould Opens Waldorf Headquarters

NEW YORK — Reinhold-Gould, Inc., will again actively participate in the activities of paper week at the Waldorf-Astoria Hotel. The company will establish Waldorf-Astoria headquarters Sunday, February 22.

With Harry E. Gould, president, will be George Hartmann, assistant to the president; Charles Lander, vice-president and controller; Fred H. Pinkerton, vice-president and sales manager; Charles DeZemler, Jr., assistant sales manager; Myron Paul, manager of the Stationers' Division; and C. V. Morris, vice-president.

Alexander Gurner and Daniel Prowler have been named new members of the Reinhold-Gould sales staff by Fred H. Pinkerton, vice-president and sales manager. Both Gurner and Prowler, who will specialize in the sale of paper to retail stationers, are, according to Mr. Pinkerton, "qualified by training and experience to be of especial assistance to the stationer."

Gurner, with a record of 15 years in retail stationery store operations, is identified as a former manager of Summit Office Supply Company, New York, and buyer and manager of the Stationery Department in the Gertz Department Store, Jamaica, N. Y. More recently, he was sales promotion manager of Garfield Company, retail stationers, Mr. Pinkerton pointed out.

Prowler, former member of the *New York Times* advertising department and until early this month, associated with Saxon Paper Company, New York, is a graduate of New York University. He majored there in advertising and marketing.

Propose New Pulp Mill For Quesnel Lake Area

VANCOUVER, B. C.—Construction of a new pulp mill in the central area of British Columbia is being promoted by the provincial government, according to information released by Premier Byron Johnson, speaking at Williams Lake recently. Mr. Johnson said that if the new pulp mill could be developed the British Columbia Power Commission would develop a hydro-electric plant with the capacity of 100,000 horsepower. He intimated that the Power Commission had already surveyed hydro sites in the area with a view to this development.

The Premier further stated that the pulp mill, which it was proposed to erect at Quesnel would have a capacity of 200 tons daily. He declined to reveal the name of the proposed operators, but said necessary information was being gathered on a preliminary application for a forest management license in the area of the Quesnel Lake drainage basin which contained an estimated 7,000,000,000 feet of lumber.

Another Beckman development to simplify modern analytical problems...

The Beckman Flame Photometer

- **Quickly attached to Beckman Quartz Spectrophotometer**
- **Invaluable aid in wide range of today's control applications**

The Beckman Flame Photometer shown with the Beckman Quartz Spectrophotometer in operating position.

Leading scientific and industrial organizations have already discovered the many important savings in time and labor, the reduction in waste, and the greatly increased control efficiencies made possible by the Beckman Quartz Spectrophotometer...

NOW FROM the Beckman development laboratories comes another advancement that increases still further the wide-range versatility and adaptability of the Beckman Quartz Spectrophotometer to various analytical and control problems. It is the Beckman Flame Photometer — a compact easily-attached unit that simplifies both qualitative and quantitative analyses of a large number of chemical elements. Its use of a hot flame is an important advantage, for this feature permits excitation of the spectral lines of a larger number of elements, including many heavy metals and alkaline earths — whereas a "cool flame" instrument excites only those of the alkali metals.

MANY APPLICATIONS

The Beckman Flame Photometer is a valuable aid to a wide variety of analytical problems, including water analyses... metal and ore analyses... determination of inorganic traces and impurities in foods, chemicals, biologicals and pharmaceuticals, and in organic materials which can be reduced to inorganic solutions.

Only a small sample is required for a complete analysis and full advantage is taken of the high resolving power and photometric accuracy of the Beckman Spectrophotometer, permitting versatility and sensitivity greater than 0.01 p.p.m. This accuracy far exceeds that obtained with filter-type or other less sensitive instruments... and the hot-flame advantages already outlined further increase the wide range versatility and accuracy of the Beckman Flame Photometer. Write for full details on the many important savings this Beckman development makes possible in modern control applications. Beckman Instruments, National Technical Laboratories, South Pasadena 16, California.

A few of the many BECKMAN Flame Photometer Advantages

▶ **SIMPLE OPERATION:** Samples are atomized and introduced at a uniform rate into a very hot oxygen and gas flame through a specially designed burner. The spectral emission lines of the elements are excited and the Spectrophotometer isolates these lines and measures their intensities relative to a blank or standard.

▶ **RAPID ANALYSES:** Because samples are atomized directly from external beakers, samples can be analyzed very rapidly. A rate of four samples per minute is easily maintained — and re-checks against blanks can be quickly made at any time.

▶ **QUICK, DIRECT READINGS:** Results are instantly and directly readable on an accurately-calibrated dial. No photographic processes or densitometer comparisons are necessary.

▶ **MAXIMUM VERSATILITY:** Unlike "cool flame" instruments which excite the spectral lines of alkali metals only, the hot flame of the Beckman Flame Photometer excites those of many elements, including heavy metals and alkali earths. This advantage, coupled with the very high resolving power and photometric accuracy of the Beckman Quartz Spectrophotometer, permits the accurate analysis of an unusually wide range of elements.

▶ **FULL SPECTRAL RANGE:** Because of the wide spectral range of the Beckman Quartz Spectrophotometer, the Flame Photometer can be used in the ultraviolet, visible and near infrared spectral regions, insuring maximum range and adaptability.

▶ **ONLY SMALL SAMPLES REQUIRED:** Sample consumption rate is less than two-tenths cc. per minute... and complete analyses can be made on samples as small as 5 cc.

▶ **HIGH SENSITIVITY:** Even very small traces of elements can be quickly and easily detected with the Beckman Flame Photometer... traces as small as a few parts per billion, depending upon the element being determined.

▶ **UNIFORM ACCURACY:** The temperature of the flame and rate of feed of the specimen can be held constant over long periods of time, permitting numerous individual measurements to be made in succession. High accuracy of the readings is not affected by fluctuations in gas or oxygen pressures.

The above are only a few of many Beckman Flame Photometer features. Write for full details!

BECKMAN **INSTRUMENTS CONTROL MODERN INDUSTRIES**

Lukens Names Huston A Vice-President

COATESVILLE, Pa. — Charles Lukens Huston, Jr., has been elected a vice-president, and Robert G. Bloom has been elected controller of Lukens Steel Company. Mr. Huston had been executive assistant to President Robert W. Wolcott, a position which he will continue to hold. The post of controller hitherto was an appointive one but stockholders at the last annual meeting of the company amended the by-laws, making the office elective.

Mr. Huston has been associated with Lukens and its divisions since 1939 when he joined the organization as director of personnel relations. Previously, he was associated with American Rolling Mill Company, Middletown, Ohio, for ten years, following his graduation from Princeton University in 1928. He also attended the Massachusetts Institute of Technology and the University of Cincinnati.

In 1943, Mr. Huston was named president of Lukenweld, a division of Lukens, specializing in the designing, engineering and fabricating of steel plate structures by welding. In 1944, he assumed the general managership of the division, continuing as president. In 1946, he was named executive assistant to the president of Lukens.

Mr. Huston has been active as a member of the board of directors, executive committee and personnel planning council of the American Management Association, chairman of the supervisory management committee, vice-chairman of the manpower committee and a member of the industrial relations committee of the National Association of Manufacturers. He is a member of the board of governors of Coatesville Hospital, president of The Family Agency of Chester County, and a member of the Session of Paoli Presbyterian Church. He is also a member of the American Iron and Steel Institute, St. Anthony's Club at M.I.T., and the Quadrangle Club at Princeton.

Mr. Huston is a son of Charles Lukens Huston, first vice-president of Lukens Steel Company, and Mrs. Huston, a lineal descendent of Isaac Pennock, a founder of the company, whose daughter Rebecca Pennock married Dr. Charles Lukens.

Robert G. Bloom has served as controller of Lukens Steel Company since 1943. Starting with the company in 1927, he was, successively, chief clerk, assistant controller and auditor. Previously, he had been an assistant cost accountant with Pittsburgh Crucible Steel Company, Midland, Pa., subsidiary of Crucible Steel Company of America; and clerk and paymaster with American Sheet and Tin Plate Co., New Kensington, Pa., subsidiary of United States Steel Corporation. A native of Mansfield, Ohio, Mr. Bloom was graduated from Parnassus (Pa.) High School and from La Salle Extension University, Chicago.

Mr. Bloom served on the *U. S. S. Arkansas* during World War I. He is a member of the American Legion, Controllers' Institute of America, B.P.O.E. and the Coatesville Presbyterian Church.

CHARLES LUKENS HUSTON, JR.
Lineal descendent of Isaac Pennock, a founder of Lukens Steel Company, Coatesville, Pa. who has been elected a vice president of the Company. Mr. Huston had been executive assistant to the president of Lukens, a position in which he will continue.

Stone & Webster Adds Badger Facilities

BOSTON — Purchase of E. B. Barger & Sons Company by Stone & Webster, Inc. for the purpose of expanding the engineering and construction activities of its subsidiary, Stone & Webster Engineering Corporation in the process and industrial fields is of special interest. It has brought together 60 years of design and construction experience in the industrial, process and public utility fields and 100 years of manufacturing, design and construction experience in the chemical, petroleum and allied fields.

Stone & Webster were foremost in the engineering and construction of high pressure boiler and turbine generator plants, mercury vapor electric generating plants, the use of pulverized fuel, high tension electric transmission facilities, forced circulation boilers, high temperature pyrolysis and the underground storage of natural gas under pressure.

Although the two organizations will continue to operate as separate entities for some time, each will supplement the other, giving to the client an even broader and more comprehensive service.

Col. Bidwell Heads Holyoke Machine Co.

HOLYOKE, Mass. — The 85-year-old Holyoke Machine Company, of 517 Main Street, has changed hands, and Col. Paul Bidwell, present treasurer, has become president of the new company.

Col. Bidwell said that the plant would be controlled by interests represented by Raphael Sagalyn, Springfield real estate operator. Two of Mr. Sagalyn's sons — Irwin and Julian — will hold the offices of vice-president and treasurer, respectively.

Business will be conducted on the same lines, according to President Bidwell, and no changes in operating personnel is anticipated.

Plans are being made to modernize the Main Street plant and an expansion program, including increased personnel, is contemplated.

Holyoke Machine Company, which makes paper mill and other special machinery and also water wheels, was founded here in 1863. Charles D. Heywood has been its most recent president.

In the deal transferring the business to the new interests, Nathaniel M. Harvey will be clerk of the company. Serving on the board of directors will be all of the officers plus Archie Burack and Raphael Sagalyn.

Pennsalt Names Mitchell Assistant Vice-President

PHILADELPHIA — Y. F. Hardcastle, vice-president in charge of manufacturing for the Pennsylvania Salt Manufacturing Company, has made known the appointment as assistant vice-president of William F. Mitchell, superintendent of Pennsalt's Wyandotte, Mich., plant for the past three years. Mr. Mitchell joined the firm in 1936 as an engineer in the technical service division, at Philadelphia. In 1939, he was transferred to the manufacturing department's central engineering division and in 1943 was appointed assistant works manager. He served in that capacity until January 1, 1945, when he was named superintendent at Wyandotte.

Gustave A. Nelson, formerly assistant superintendent at Wyandotte, has succeeded Mr. Mitchell as superintendent, there. Mr. Nelson has been with Pennsalt since 1928 and was technical foreman before becoming assistant superintendent.

Herman J. Eichengofer and Hugh C. Land have been made assistant superintendents of the Wyandotte plant. Mr. Eichengofer, with the company since 1932, was production supervisor at the time of his new appointment. Mr. Land came to Pennsalt in 1946 as a maintenance and construction engineer after serving during the war with the Chemical Warfare Service.

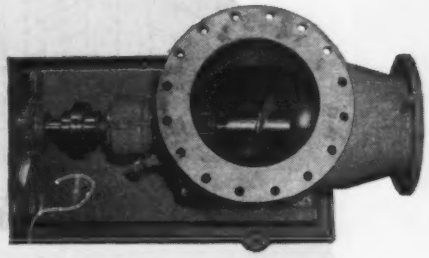
heavy pulp moves *fast!*

BJ

Six of the new *Pulp Pumps*

in series with the new BJ screw feeder pump, handle 8 to 10% Stock with ease

8 TO 10% STOCK IS HEAVY! But not too heavy for the pumping set-up engineered by BJ for a large Mid-Western pulp mill. Six 100 hp, 6″ x 12″ BJ *Special Duty* Pulp Pumps operate in a series. The suction of the first pump is fed by a 16″, 15 hp BJ Screw Feeder Pump. No suction line trouble, no clogging. Flow is smooth and positive. (These *Special Duty* Pulp Pumps are identical in design to the new *standard line* of BJ Pulp Pumps, except for impeller size.)



Top view of BJ Screw Feeder Pump

THE NEW BJ PULP PUMPS can be converted to acid and liquor service (or back to pulp stock service) merely by changing a few pump parts. For hot service, the standard stuffingbox can be replaced with water-jacketed stuffingbox. Entire bracket, rotating element and pump cover can be unbolted and lifted free from case without disturbing suction and discharge piping. Impeller clearance adjustable without dismantling. *Standard Pump Capacities to 4000 gpm. Heads to 200 ft. Sizes to 10″.*

BJ PULP PUMPS
STOCK CONSISTENCY RANGE

	Standard Pumps	Special-duty Pumps
Normal Range	Up to 6%	
Range with Screw Feeder Pump in Series	6% to 8%	8% to 10%

Byron Jackson Co.

Established 1872

LOS ANGELES 54, CALIFORNIA

Offices in Principal Cities

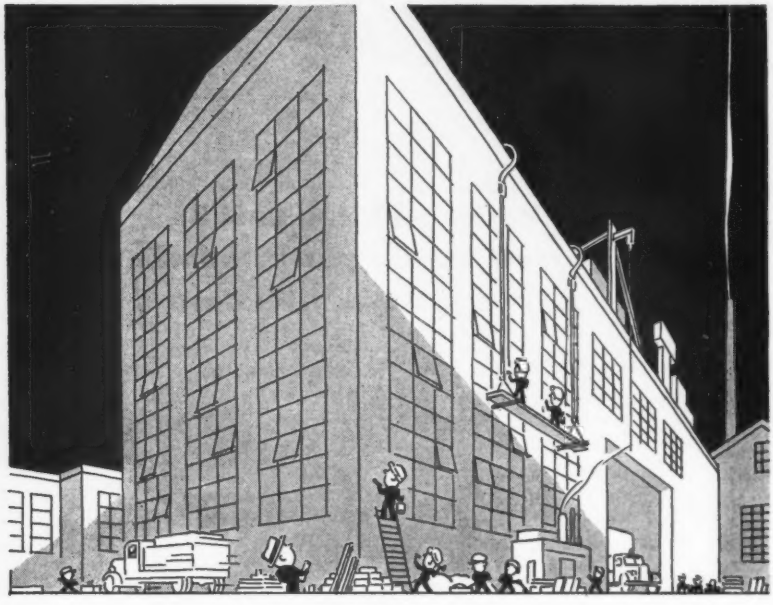
Mohawk Branch Holds Anniversary Dinner Dance

COHOES, N. Y.—The anniversary dance and banquet of the Mohawk branch of the International Brotherhood of Papermakers was held during the past week with Ernest B. Lampton as the principal speaker. He pointed out that the organization is in favor of the recently enacted Taft-Hartley Labor Law and has been for many years.

The history of the local branch from the time of its organization in 1939 to the present time was outlined by Merton W. Crowther, president. George E. O'Connor, president of the Mohawk Paper Mills, Inc., gave a short address stressing the harmonious relations which have existed between the company and the organization. It was also announced that the locals, a member of the New York State Council of Pulp and Paper Mill Unions, will be represented by a delegation at the conference at Utica on April 18.

Moore Gets Larger Organizing Territory

HOLYOKE, Mass.—Edward M. Moore, organizer for the International Brotherhood of Papermakers and former president of Eagle Lodge of Papermakers, has been given additional territory in Massachusetts and New York State under organized labor. He has been named to organize paper mill employees throughout the Berkshires and into New York State.



Cincinnati increases roll covering facilities

Production is getting a big boost at Cincinnati. Improved facilities combined with an enlarged plant are doing a good job in meeting the increasing demand for Cincinnati Rubber Covered Rolls. No change, however, in the time-proven precision methods used at Cincinnati to give paper mills the best rubber roll covers possible to produce.

Send your next roll to Cincinnati for covering.

THE CINCINNATI RUBBER MFG. CO.
CINCINNATI 12, OHIO

CINCINNATI RUBBER COVERED ROLLS

Package Machinery Reports Sales Up

(Continued from page 14)

preferred stocks, $74,678 on common stocks, and $296,455 was transferred to surplus. Total surplus at the end of 1947 was $1,261,435.

President Mohlman continued:

"I feel it of particular importance to you stockholders — the people who really own our company — to cite the company's continued progress in its relationship with our various publics. These publics are our employees, our stockholders, customers, suppliers, and the community in which we work and live. It has been a real source of pleasure to me to hear on many occasions and from numerous outside sources that Package Machinery stands pre-eminent in its industrial and public relations.

"At this time, I want to express our sincere appreciation to the trade journals and to the Springfield newspapers for their splendid cooperation in reporting our employee and company affairs. Our people like to feel that the general public knows and appreciates the industrial harmony that exists here. And I still say that the best assets we have are the people who work with us, who, whatever their work may be, feel just as much responsibility for our dollars as do the salesmen in the field or the executives at their desks. I'm sure they feel that Package Machinery Co. is a good place to work."

Just "how good" can be shown by the fact that, following the stockholders' meeting, directors of the company declared a 120th consecutive quarterly dividend of 40 cents a share payable March 1 to all stockholders of record as of February 20, and at the same time announced substantial payments to employees on a profit-sharing basis.

In addition to the dividend to stockholders, the company announced that all personnel of the company, employed for one year or more, will share in profits on the basis of the earning power of four shares of stock for each year of their employment up to 20 years. This profit-sharing plan has been in effect since 1926.

Under another phase of the profit-sharing plan, employees will receive 3 percent of three months' earnings up to $750.

A 20-year employe credited with the earnings of 80 shares of stock will receive $32. The same employee credited with 3 percent on earnings of $750 in a three-months' period will also receive an additional $22.50.

President Mohlman told the stockholders he was not in a position to prophesy whether hard times were ahead, but said that the company was well-prepared for a possible business shrinkage if it does come. If it doesn't, he said, the company will have made a progressive step that should reflect itself in additional business security over and above the present state of company affairs.

To help you avoid losses and delays caused by corrosion...

nothing equals Stainless Steel

RIGHT now, when more pulp must be made more quickly into more paper—when it is so important to get the most out of mill facilities—when you are faced with the imperative need for reducing or eliminating time-consuming breakdowns and work stoppages—don't overlook the proved superiority of Stainless Steel in overcoming corrosion troubles.

What especially recommends Stainless Steel for pulp and paper mill applications is its unusual *versatility*:—its ability to resist so many types of corrosives—its availability in a wide variety of forms and analyses—and the comparative ease with which it can be fabricated.

In U·S·S Stainless Steel we offer users and builders of pulp and paper making equipment a *complete* family of perfected, service-tested corrosion- and heat-resisting steels that will help you meet the challenge of today's stepped-up production pace. These steels allow the widest latitude in design. They permit the employment of the most advanced manufacturing techniques.

So bring your corrosion problems to us. If they can be solved by U·S·S Stainless Steel, our engineers who are specialists in its use will gladly give you the benefit of their long experience. Their cooperation cannot fail to be helpful in obtaining for you, optimum benefits at minimum cost.

USS STAINLESS STEEL — UNITED STATES STEEL

U·S·S STAINLESS STEEL

SHEETS · STRIP · PLATES · BARS · BILLETS · PIPE · TUBES · WIRE · SPECIAL SECTIONS

UNITED STATES STEEL AMERICAN STEEL & WIRE COMPANY, Cleveland, Chicago & New York
CARNEGIE-ILLINOIS STEEL CORPORATION, Pittsburgh & Chicago · COLUMBIA STEEL COMPANY, San Francisco
NATIONAL TUBE COMPANY, Pittsburgh · TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham
UNITED STATES STEEL SUPPLY COMPANY, Warehouse Distributors—Coast to coast: UNITED STATES STEEL EXPORT COMPANY, New York

Pennsalt Vice-President Named To Board of Directors

PHILADELPHIA—The board of directors of the Pennsylvania Salt Manufacturing Company has elected Y. F. Hardcastle, Pennsalt vice-president in charge of manufacturing, as a board member. Mr. Hardcastle had been vice-president since 1927 and in this capacity supervised the 98-year-old chemical company's manufacturing operations through the period of its greatest expansion.

Joining Pennsalt's engineering department at the Wyandotte, Mich., plant in 1909, Mr. Hardcastle the following year was named supervisor of the plant's electrolytic operations. In 1915 he was made superintendent at Wyandotte, largest of Pennsalt's present seven plants.

After being named vice-president, Mr. Hardcastle remained at Wyandotte until 1932, when he moved to the company's executive offices in Philadelphia.

A native of Easton, Maryland, Mr. Hardcastle, now 64, was graduated from Lehigh University in 1906 with the degree of electro metallurgical engineer.

Mr. Hardcastle is a director of the Main Belting Company, Philadelphia.

Let's get acquainted

For up-to-the-minute paper distribution call WOrth 2-0050. With a background of 92 years as distributors for leading paper mills, W.G.P. can do a job for you on paper, paper board and specialties.

W.G.P.

Printing, Converting & Industrial Papers
Board — Saturating
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DOMESTIC AND EXPORT

MEMBER PAPER ASSOCIATION OF NEW YORK CITY

Boyer Decision Held Of Basic Import

(Continued from page 14)

be in letting directors know exactly what information will be required. That, however, could possibly be remedied by clarification or amendment to the regulations.

The learned judge also indicated that shareholders should be given information on the state of the affairs of the company in plenty of time for them to digest it before voting time. "The interested parties must be given fair information before the meeting, for at the meeting the directors have already the favorable proxies in their possession," the court says.

Mr. Justice Boyer's comments on the setting up of the St. Lawrence Corp. shareholders' committee indicates that close attention should be given to the naming of all shareholders' committees. Members of these committees may be required to disclose their specific interest in any reorganization and also to quote "facts and reasons in support" of their opinions.

Less certain are the implications of how a holder of more than one class of security can vote his securities "in the interests of the class to which the voter belongs and must not be influenced by other interests." Mr. Boyer based one of his points on the fact that some of the preferred holders were "necessarily influenced by their holdings of company shares." This might mean that a person holding more than one class of security would be unable to vote in corporate reorganizations.

The decision in Quebec has given the legal profession something to think about. Until the implications are clarified other reorganizations now pending may be held up.

It is understood here that the St. Lawrence Corporation has not come to any decision as to their next step as a result of the court's refusal to approve their reorganization plans. At their meeting last week, it is understood, the matter was referred back to their executive committee for study.

The decision on whether to proceed with the reorganization of St. Lawrence Paper Mills is also left for further consideration. The legal position is not clear in view of the decision on St. Lawrence Corporation.

Loggers Name Roughton To Safety Post

VANCOUVER, B. C.—James Roughton has been appointed manager of the accident prevention department of the British Columbia Loggers' Association. Mr. Roughton has had many years association with safety and personnel work and will devote his attention to the promotion of accident prevention work in woods operations. He will also seek to coordinate work being done by the member firms of the association in the promotion of safety in their respective operations.

Lawrence College Honors L. M. Alexander's Memory

APPLETON, Wis.—Lawrence College is honoring the memory of Lewis Miller Alexander, one of the founders of Nekoosa-Edwards Paper Company and its president from 1910 until his death on August 7, 1934, by planning a properly inscribed plaque to be placed in the hall of its proposed Memorial Student Union building soon to be built on the North Campus. Because the new building will include the "old gymn," given to Lawrence College by Mr. Alexander in 1901, a recent meeting of alumni and trustees gathered to discuss final building plans unanimously voted to continue the Alexander name in that part of the new building by designating it "Alexander Hall."

The interests of Mr. Alexander and other members of his family in Lawrence College date back to the eighteen-nineties. The chair of English Literature, made possible through the gifts of Mrs. Edwards and a host of men and women in the state, was in 1897 named the Edwards-Alexander Chair in honor of Mrs. Edwards, who was the principal donor, and of Mr. Alexander, her son-in-law.

In addition to the substantial financial support given Lawrence College, L. M. Alexander gave generously of his time and counsel. Elected to the board of trustees of Lawrence College in 1894, and a member until his death, he served as president of that governing body for 35 of the 40 years he was a member. He was also one of seven charter members of the Board of Trustees of the Institute of Paper Chemistry and was most active in establishing its activities.

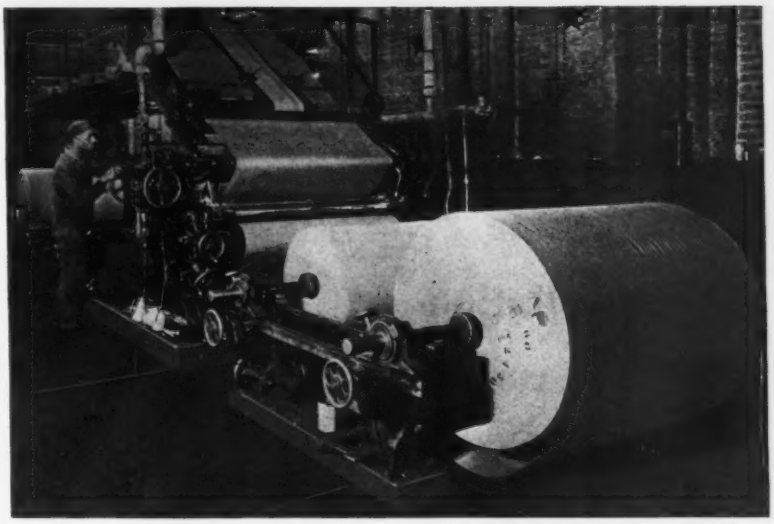
John E. Alexander, president and general manager of Nekoosa-Edwards Paper Company since 1934, served concurrently with his father as a member of the Lawrence College board of trustees from 1925 through 1933.

Wisconsin Orders End To Lake Pollution

MADISON, Wis. — The Wisconsin State Committee on Water Pollution issued formally on February 5 its expected order requiring Neenah and Menasha, the Outagamie County Asylum, and several business firms to take steps to abate the pollution of Little Lake Butte des Morts.

The committee's orders have the force of law. The findings and the order were based on investigations following complaints about pollution of the lake. Public hearing was held last fall in Menasha.

The committee ordered the Wisconsin Rendering Company, the County Asylum, Grand View Dairies, the Bergstrom Paper Company, and Kimberly-Clark Corporation to take such action as is necessary to reduce the flow of polluting wastes into the lake before June 1, 1949.



65-hp corrugator machine drained by C-B System. Combining plates in background

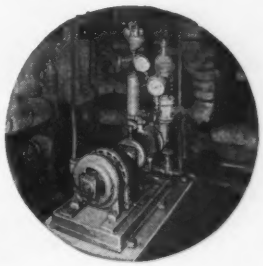
Heat Costs Money—*Save It!*

with a *Cochrane C-B System*

If the steam from your corrugators and combiners is flashed off to a vented receiver on its way back to the boiler, you're losing valuable heat units . . . and heat costs money. If condensate and insulating entrained air are not removed from the steam system as soon as they are formed, they cool the utilization equipment and—again you're wasting valuable heat units . . . losing money. Heat is expensive—save it!

The Cochrane C-B high pressure system of condensate return is the modern solution to steam economy. In this "closed circuit" system there is no "flashing" to a vented receiver or open well. The condensate is returned to the boiler at the highest possible temperature, saving as high as 15% on fuel bills. This positive removal of condensate insures higher and more uniform temperatures in the corrugators and combiners thus stepping up processing time and increasing production.

For detailed information on the Cochrane C-B System, write today for our Bulletin 3250.



The jet loop pump . . . heart of the Cochrane C-B System.

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OF HIGH PRESSURE, HIGH TEMPERATURE CONDENSATE RETURN

a complete paper machine installation in 16 months from the word "go"

This is the latest record of EBASCO engineers on a complete paper machine installation. For a southwestern paper mill, they did the complete job through their teamwork of engineering and installation.

Look for this same profitable speed in your own plans for expansion, modernization and installation of a complete new mill.

EBASCO designs buildings and equipment, purchases all components, erects and installs everything. We deliver to you *a paper machine in operation.*

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OBITUARY

J. F. Roten

NEW YORK — Julius F. Roten, vice-president and director of L. Sonneborn Sons, Inc., New York, oil refiners and manufacturing chemists, died January 24 at Mount Sinai Hospital. Mr. Roten, who was 59 years of age, joined the Sonneborn company in 1905.

An authority on petroleum derivatives, he was instrumental in the development of improved methods of refining white mineral oils, petroleums and petroleum sulfonates and in creating new uses for these products in the manufacture of a great variety of end-products including cosmetics, pharmaceuticals, paper, rubber and plastics, and in many types of chemical processing. He was also active in promoting the development and distribution of motor oils and lubricants, textile processing specialties, and products used for building construction and maintenance.

Mr. Roten is survived by his wife, a daughter, a son, four sisters and four brothers.

William C. Schoettle

PHILADELPHIA—William C. Schoettle, vice president of the Edwin J. Schoettle Company, paper box manufacturers, 533 North 11th Street, died recently at his home, 7703 Lincoln drive. He was 79. He was the son of Ferdinand and Mary Schoettle. At the death of his father he succeeded him as president of F. Schoettle, Inc., which was absorbed later by the present company.

He was the last of a family of five brothers who were engaged in the paper business. His brother, Edwin J. Schoettle, president of the company, died December 24th.

Mr. Schoettle is survived by a sister, Miss Alice C. Schoettle. Solemn requiem Mass was sung Saturday at 11 A. M. at Holy Cross Church, Mt. Airy. Interment was private.

Amasa Oatman

NIAGARA FALLS, N. Y.—Amasa Atwood Oatman, 84, retired paper company executive and one of the best known of the older residents of the city, died February 8 at the family home, 312 Jefferson Avenue, from complications which followed a recent illness of pneumonia. He apparently was on the road to recovery but suffered a second attack a few days ago from which he never recovered.

Mr. Oatmon was born at Dunkirk, April 10, 1863, a son of the late Louis C. and Frances Oatman, and had been a resident of this city for over 70 years. A pioneer in the paper industry here, he served as treasurer of the old Cliff Paper Company for many years until the firm was dissolved about 15 years ago when he retired from active business.

Edwin A. Weihenmayer

PHILADELPHIA—Edwin A. Weihenmayer, executive vice president of the Jessup & Moore Paper Company, with which he had been associated 46 years, died on February 5. Mr. Wiehenmayer, who lived at 7404 Mountain avenue, Melrose Park, was a member of the Union League, the Huntingdon Valley Country Club and Seaview Golf Club. Surviving are a son, Edwin A., Jr., of Noble, and a brother, William J., of Rydal.

George C. Gilmore

WORCESTER, Mass. — George C. Gilmore, 72, superintendent of the former Whitney Manufacturing Co., died recently at his home here. He started at the envelope company 44 years ago as an office boy, and rose to superintendent in 1924. He retired seven years ago.

He was a veteran of the Spanish-American War. Two sisters and several nephews survive him.

Marion H. S. Andrew

BOSTON — Sympathy of all is extended to John A. Andrew in the passing of his wife, Marion H. S. Andrew, in Brookline, February 4. Members of the trade attended the funeral service at the Forest Hills Crematory Chapel February 6. Mr. Andrew, a mill representative, was formerly a president of the Boston Paper Trade Association and is well known.

Diamond Promotes Matches In Approved Mail Wrapping

NEW YORK — A new promotion of book matches as a souvenir has been introduced by the book match sales department of Diamond Match Company. Designed for hotels, resorts, restaurants and night clubs, the promotion suggests to patrons that they mail a carton of 50 match books to friends in other cities. Tests are to be made on cigar counters and news stands. Matches are mailed in a patented foil-lined mailing carton which has been approved by the postoffice department.

A counter card explaining the offer and having a place for a sample match book has been prepared and is being offered to the trade by Diamond salesmen. Diamond offers the counter cards free and supplies the mailing cartons at a nominal cost.

Price of the complete package at the retail level has been left open, to allow a choice of operation.

"Let's make the Shoe fit!"

Just as the blacksmith skilfully forges and fits each shoe to give a firm, comfortable footing, National develops starch specialties to fit the specific needs of the paper industry.

An excellent example is the development by National of NADEX #344 — an amazingly efficient specialty binder for high speed machine coating.

Experience has shown that the use of ordinary starch products and binders in the formulation of coating colors makes them either too heavy to give low yield points and satisfactory machining characteristics; or too thin to give adequate coating strength.

NADEX #344 is exactly fitted to the requirements of high speed machine coating with good stability. It cooks thin and produces high solids coating colors with . . . low yield points . . . excellent machining properties . . . adequate strength in the coating.

NADEX #344 is but one of a series of specialty starch derivatives and modifications that have been developed by National — a basic refiner and processor of all types of starch — to fit the specific needs of the paper industry for beater, tub and calender sizes and coating work.

National
STARCH PRODUCTS

Offices: 270 Madison Avenue, New York 16; Boston, Philadelphia, Atlanta, New Orleans, Indianapolis, Chicago, San Francisco and other principal cities. In Canada: Meredith, Simmons & Co., Ltd.; Toronto and Montreal. In Holland: Nationale Zetmeelindustrie, N. V., Veendam.

STARCHES — AND SPECIALTIES WITH EASILY DEMONSTRATED SUPERIORITY

TRENDS

Office of the PAPER TRADE JOURNAL, Wednesday, February 18, 1948.

A note of caution in buying was the only recorded effect on the paper and paperboard industries of the decline in the general commodity market, although both branches of the industry registered a greater decline in index than did general business activity.

Index of general business activity for the week ended February 7 receded to 150.3 from 151.3 in the preceding week, compared with 143.8 in the corresponding week of 1947. Index of paperboard production dropped to 175.6 from 183.2 in the preceding week, compared with 178.7 in the corresponding week of 1947.

Paper production for the week ended February 7 was estimated at 98.9 percent, compared with 103.6 (revised figure) for the previous week, with 106.2 for the corresponding week of 1947, with 99.7 for 1946, and with 90.1 for the corresponding week of 1945.

Paperboard production for the week ended February 7 was 100.0 percent of capacity, compared with 103.0 for the previous week, with 104.0 for the corresponding week of 1947, with 97.0 for 1946, and with 93.0 for the corresponding week of 1945.

Paper boxes reflect the slight upward trend in price of pulp and freight but indications are towards a leveling off. Drums, tubes and bags are reported as readily available in supply, with increased tonnages coming on to the market later in the year.

Although some sources are sanguine about the kraft wrapping and tissue situation, generally the opinion of the trade is that no improvement along these lines is in sight. Increased production in tissue has not kept pace with increased per capita demand, and shortages of all varieties exist, particularly sanitary types. And while a recession in general business might conceivably alter present-day demands for multi-walls and thus release kraft pulp to wrapping papers, such a likelihood is not seen within the range of probability. Increased uses and heightened demand for replacement of textile bags by paper appears to be the immediate end use for increasing tonnage of kraft pulp.

High prices of crackers and cookies have reportedly drawn consumer resistance with consequent lag in sales. Manufacturers of these lines are seen as buying paper and board products with caution.

Frozen water supply was considerably responsible for the reported drop of 1.3 percent in North American newsprint production for the month of January. Canadian production amounting to 370,637 tons was 0.4 percent ahead of January, 1947, figures; United States with 65,094 tons declined 5.2 percent; and Newfoundland with 28,198 tons lagged 12.4 percent.

Woodpulp

Market supplies of all types of pulp are unimproved with the exception of southern kraft's temporary softening. Contract prices on this variety are unchanged but spot market prices have declined to narrow the differential between contract and spot. It is not expected in view of narrowing Scandinavian shipments that a weakened market on kraft will result. This situation is viewed as a temporary result of bad weather in the south.

Writing about the Norwegian pulp and paper market, *Svensk Papersmasse-Tidning* says that "Sales activities in the last weeks of the year were rather small and only a few contracts have been reported. The market still has a firm undertone, and the limited sales activities should be seen against the fact that there are only very small unsold quantities available for delivery during the winter months. For mechanical pulp, too, sales activities are very limited. Occupation at the various mills in Norway has been uneven and the average production did not come up to more than about fifty percent of the total capacity, the reason being lack of pulp wood. This low production means high overhead costs and unsatisfactory working conditions for the companies and for their employees. Prices have been firm and have risen a little. But the deliveries of pulp to the home paper mills at very much reduced ceiling prices have been very burdensome."

Here and There

Steady improvement in forest management and lumbering methods has tremendously improved our forest resources situation, according to the National Lumber Manufacturers' Association; and we are approaching the point where the United States will be growing more trees each year than are removed.

Reporting on Finland's paper industry, a British journal says that rehabilitation progresses in spite of difficulties and general frustration regarding export markets, i.e., lack of essential raw materials, shortage of machinery for repairs with deliveries far behind schedule, et cetera. Nor has the long drought eased the situation, particularly in connection with hydroelectric power. Within these limitations, supplies of pulp are coming in fairly steady quantities.

The importance placed by Finland upon its paper industry is evidenced in the special wagons built for the transportation of paper from the mills to the ports. Everything that might damage the reels of paper has been eliminated—nuts, bolts, moulding—and the outside inscribed "For export paper only." Use of these two hundred wagons for anything but cartage of paper is prohibited.

While development of the paper industry in Brazil is considered entirely possible, lack of equipment and woodpulp offer impediments.

Production of paper bags, always an important part of the Netherlands paper industry, is being hindered in growth by lack of replacements for wornout German machines as by lack of raw materials. Of the 207 enterprises now manufacturing paper products, 76 make paper bags, and 10 make bags exclusively, although none produces from its own raw materials. Kraft is used for the strong double bags which were first used for cement, though the number of commodities packed in this manner now totals 70 with sugar about to be added to the list. Sulphite paper goes into the quality products.

Thirty-nine carloads of Mexican pulp came into the United States in a recent month from Atentique, Mexico.

According to the Soviet Press, the Segezha paper combine located in the Karelo-Finnish Soviet Socialist Republic on the Leningrad-Murmansk Railroad has been expanded since 1940 to become one of the largest integrated pulp and by-products mills in the world. It is now producing two-thirds of the total Soviet output of kraft wrapping paper, paper bags and paper containers, as well as by-products of turpentine, rosin and soap.

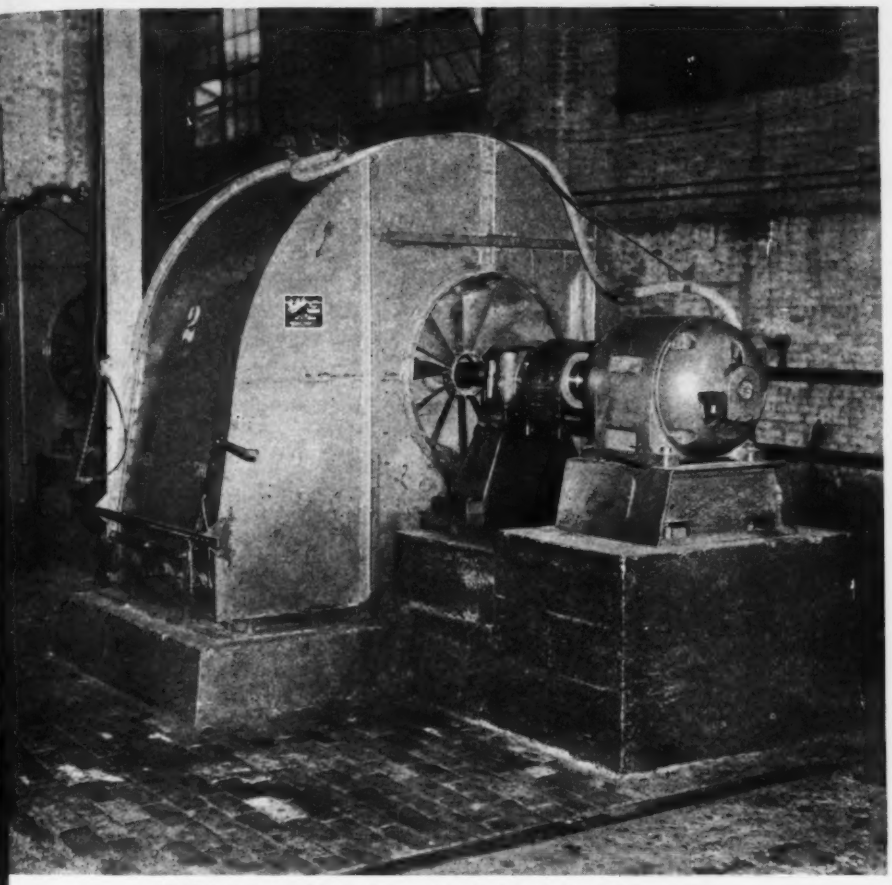
More than one-half of Japan's total production of pulpwood and almost a half of its woodpulp produced in the ten-year period up to 1945 was concentrated in Karafuto, the loss of which considerably cuts available raw material for the sulphite pulp and kraft industries. Between 1930-1940, 65 percent of Japan's sulphite was made in Karafuto and nearly all its kraft, though by 1945 a fair portion of kraft was located in Japan proper as well as most of the mechanical pulp. At the war's end there were about ninety wood pulp mills in Japan proper and 275 paper mills, most of which are small and outmoded. Production of all types of pulp in 1945 was about 18 percent of 1941's production, shortages of coal, chemicals and wood being largely responsible for the deficit.

Waste Paper

The week registered further rises in prices of bulk grades, the sharpest being on old corrugated which experienced a strong demand in all large trading centers without improvement in supply. General rises of $2 a ton were recorded.

(Continued on page 36)

AIR EQUIPMENT TO HELP YOUR BUSINES!



"Buffalo" Draft Fan in Power Plant of Prominent Paper Mill

THE SOUNDEST POLICY ON DRAFT FANS —*Get* THE FAN THAT *Lasts!*

"Buffalo" builds draft fans to reduce one of the prime fan "headaches" encountered by power plant engineers—fan breakdown. Among other things, "Buffalo" engineers have put extra heavy plate in rotors, blades and housings—hot-riveted and welded these parts together for the rigid strength the job demands. Blade design has been improved to reduce wear. On induced draft fans scroll liners are available.

You can "get at" Buffalo Fans in a hurry! The sectional, bolted housing design allows convenient dismantling. And as for efficiencies, "Buffalo" ratings are certified—your assurance of *getting the air you pay for!*

When you buy a draft fan, buy one that stands up longer and handles more air —a "Buffalo" Fan!

FOR COMPLETE DETAILS, WRITE:

BUFFALO FORGE COMPANY

159 Mortimer St., Buffalo, N. Y.

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

FANS by "Buffalo"

EQUIPMENT FOR

- ★ VENTILATING
- ★ HEATING
- ★ COMFORT COOLING
- ★ PROCESS COOLING
- ★ AIR TEMPERING
- ★ AIR WASHING
- ★ EXHAUSTING
- ★ BLOWING
- ★ FORCED DRAFT
- ★ INDUCED DRAFT
- ★ PRESSURE BLOWING
- ★ CLEANING
- ★ DRYING

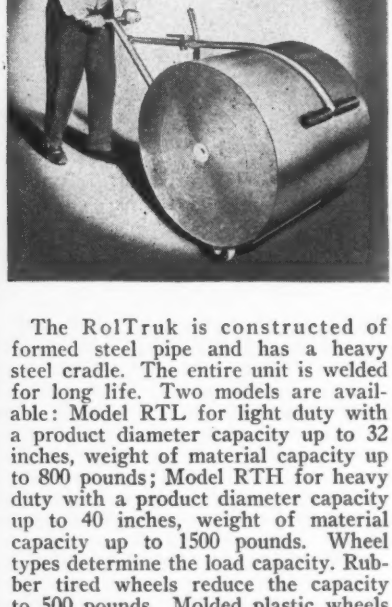
CUTTING AIR COSTS IN EVERY BRANCH OF INDUSTRY

EQUIPMENT AND SUPPLY NEWS

Ironbound Markets New Roll-Handling Truck

HILLSIDE, N. J.—A new truck to be known as the RolTruk has been added to the line of Ironbound Box & Lumber Company, 102 Hoffman Place, Hillside, N. J., to meet the growing demand for an easy-to-handle unit, noncomplicated in design, that will lift and move heavy cylindrical objects. The RolTruk was developed specifically to handle rolls of printing paper, wrapping paper, protective coatings, but it will easily lift and carry any cylindrical object such as a drum, barrel, keg.

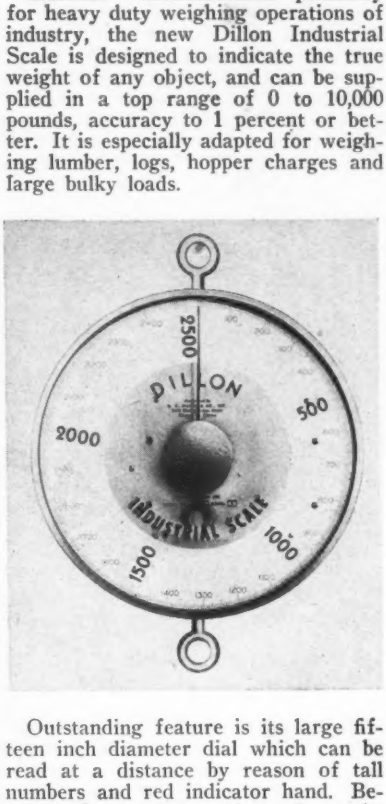
One of the features of the unit is the nonslip arm. Once the arm is locked around the roll, it will not allow the material being handled to roll off until the finger-tip release catch is manually disengaged, a feature which prevents accidents to workers and eliminates damage to the product. The arm is so constructed that it grasps the roll securely without damaging it in any way.



The RolTruk is constructed of formed steel pipe and has a heavy steel cradle. The entire unit is welded for long life. Two models are available: Model RTL for light duty with a product diameter capacity up to 32 inches, weight of material capacity up to 800 pounds; Model RTH for heavy duty with a product diameter capacity up to 40 inches, weight of material capacity up to 1500 pounds. Wheel types determine the load capacity. Rubber tired wheels reduce the capacity to 500 pounds. Molded plastic wheels will carry up to 800 pounds and steel wheels permit loads up to 1500 pounds. Standard RolTruks are available for immediate delivery. Special capacity units are shipped two weeks delivery.

Precision Industrial Scale Marketed By Dillon

CHICAGO — Manufactured primarily for heavy duty weighing operations of industry, the new Dillon Industrial Scale is designed to indicate the true weight of any object, and can be supplied in a top range of 0 to 10,000 pounds, accuracy to 1 percent or better. It is especially adapted for weighing lumber, logs, hopper charges and large bulky loads.



Outstanding feature is its large fifteen inch diameter dial which can be read at a distance by reason of tall numbers and red indicator hand. Because of compactness, the scale can be carried about wherever needed. Of extra heavy gauge steel construction throughout, its mechanism totally enclosed to keep out dust, dirt and oil, the scale is expected to give trouble-free service for many years without adjustment.

Descriptive bulletin available from manufacturer, W. C. Dillon & Company, Inc., 5410 West Harrison Street, Chicago 44, Ill.

Bulletin Describes New Jones-Bertrams Patent Beater

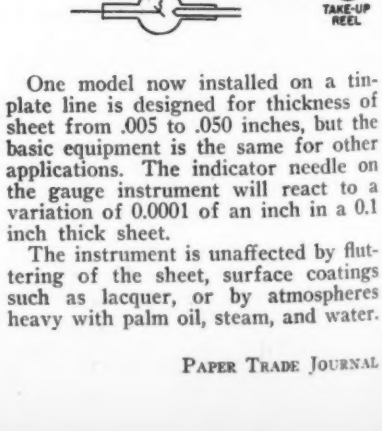
PITTSFIELD, Mass. — A new Jones Bertrams Patent Bulletin number EDJ-1008 has just been issued by E. D. Jones & Sons Company. The bulletin describes the design features and the effective circulation and beating action of the Jones Bertrams Patent Beater. Information is given regarding the roll, bedplates, the different types of automatic control and other pertinent data and illustrations pertaining to the design, construction and operational and economy advantages of the Jones-Bertrams Patent Beater.

Westinghouse X-Ray Gauge Controls Sheet Thickness

PITTSBURGH—In answer to the thickness gauging problems in modern high speed rolling mills, Westinghouse has developed an x-ray thickness gauge which is said to offer three unique advantages. It undergoes no contact with the material being gauged; it provides ready access to areas never before gauged; and has high sensitivity and accuracy.

Present applications to sheet metals according to H. D. Moreland, manager of the Westinghouse X-ray Division, indicate that the gauge will increase output of prime sheet, solve some operating problems, and eliminate marring of the surface of the materials being gauged. As a quality control instrument, this equipment is expected to find application in the thickness control of hot metal and glass sheet, aluminum foil, plastics, paper, and other sheet and strip materials.

Employing two x-ray sources at right angles with one photomultiplier-fluorescent screen pick-up unit at the apex, the gauge compares the controlled material to a correct sample. The two x-ray sources emit x-rays 180° out of phase. Positive and negative readings showing the thickness differential above or below the standard sample are shown on an instrument within view of the operator. The gauge automatically rejects off-gauge material in flying shear applications, or controls the screw downs to maintain uniform thickness in material coming from a cold mill.



One model now installed on a tinplate line is designed for thickness of sheet from .005 to .050 inches, but the basic equipment is the same for other applications. The indicator needle on the gauge instrument will react to a variation of 0.0001 of an inch in a 0.1 inch thick sheet.

The instrument is unaffected by fluttering of the sheet, surface coatings such as lacquer, or by atmospheres heavy with palm oil, steam, and water.

LITERATURE

Astell Stainless Steel Piping And Fittings Bulletined

NEW YORK — Tables showing the properties of the most commonly used types of stainless steel, displayed for easy reference, are featured in a new bulletin describing Astell Stainless Steel Pipe, Tubing and Fittings.

The bulletin discusses the application of stainless steel pipe, tubing and fittings in various industries where different types of corrosion are encountered. Stability under wide temperature ranges, elimination of contamination in food processing, service life and workable properties of the metal are among other subjects introduced.

Also tabulated are the dimensions, including wall thicknesses, of Astell light wall, standard and extra heavy grades of pipe which can be supplied in any size for use with Astell fittings.

A feature of probable help is a series of photographs showing Astell fittings as they actually appear, with sectional diagrams of other flanged and screwed fittings. Another series of photos shows a variety of stainless light wall welding fittings and stainless flanges included in the Astell line.

Copies of this new bulletin may be secured by writing John B. Astell & Co., 90 West Broadway, New York 7, N. Y.

"Material Handling News" Stresses Integrated Manufacture

BATTLE CREEK — Describing their fork trucks and towing tractors as "largely assemblies of Clark products," the current issue of Clark's "Material Handling News" stresses the importance of "blood lines" blended into the Tructractor machines.

In effect, this issue of the magazine is a tabloid history of the company's product - by - product growth, and emphasizes the value of the varied experience gained through each of those products. It features most of the major units that go into Clark fork trucks and tractors—including electric steel castings, wheels, axles, transmissions, gears and forgings.

That these products are made in their own factories on a mass-production scale is pointed out as a basic factor in the moderate first cost and low operating costs claimed for Clark machines.

Copies of the "Material Handling News" are obtainable from Clark Equipment Company, Tructractor Division, Battle Creek, Michigan.

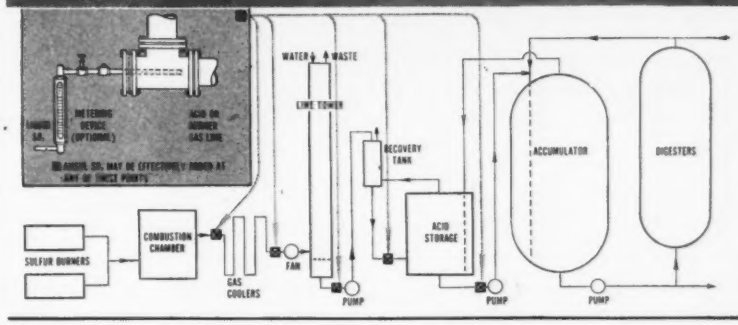
Also available is their new 40-page Tructractor catalog featuring special handling devices.

the road to 深火* is paved with good intentions

...DON'T SHUT DOWN YOUR MILL...if you intend to repair your acid system

*Confucius say—"No hell in Chinese language"

Use ANSUL SO_2 and maintain maximum production!



If you must repair or replace your sulphur burner, combustion chamber or gas coolers, use ANSUL liquid SO_2 and keep your mill operating at capacity.

1—Avoid interruption of acid plant operation.
2—Maintain peak capacity in pulp plant during repairs of acid system.
3—Get proper balance between free and combined SO_2.
4—At a very small installation cost.

Send for complete information. You will learn also how to use Ansul Liquid SO_2 to fortify your cooking acid during the Summer months, and for green wood cooks . . . to improve your digester schedules, obtain more complete pulping and better screening of pulp.

Ansul liquid SO_2 may be added simultaneously at one or more points in the system (see diagram).

• • •

Prepare for an emergency. Consult the Ansul Technical Staff *NOW*. Learn how easy and economical it is to avoid shutdown headaches.

LIQUID Sulfur Dioxide ANSUL

ANSUL CHEMICAL COMPANY
INDUSTRIAL CHEMICALS DIVISION, MARINETTE, WIS.
60 E. 42nd St., New York — 535 Chestnut St., Philadelphia

IMPORTS

NEW YORK IMPORTS

WEEK ENDING FEBRUARY 17, 1948

SUMMARY

Newsprint	6381 rolls
Printing Paper	1 cs.
Paperhangings	4 cs., 5 bls.
Photo Base Board	139 cs.
Photo Paper	2 cs.
Miscellaneous Paper	5 cs.

NEWSPRINT

N. Y. Journal American, Markland, Liverpool, N. S., 1115 rolls.

N. Y. Herald Tribune, Markland, Liverpool, N. S., 1886 rolls.

N. Y. World Telegram, Markland, Liverpool, N. S., 706 rolls.

Brooklyn Eagle, Inc., Markland, Liverpool, N. S., 685 rolls.

Herald Statesman, Inc., Markland, Liverpool, N. S., 41 rolls.

Price & Pierce, Ltd., Markland, Liverpool, N. S., 190 rolls.

Richmond Newspapers, Inc., Markland, Liverpool, N. S., 1758 rolls.

PRINTING PAPER

Stevens Nelson Paper Corp., American Farmer, London, 1 cs.

PAPERHANGINGS

W. H. S. Lloyd & Co., American Farmer, London, 4 cs., 5 bls.

PHOTO BASE BOARD

American Express Co., American Farmer, London, 89 cs.

Lep Transport, Inc., American Farmer, London, 50 cs.

PHOTO PAPER

(———), American Farmer, London, 2 cs.

MISCELLANEOUS PAPER

Stevens Nelson Paper Corp., American Farmer, London, 5 cs.

RAGS, BAGGINGS, ETC.

J. Eisenberg & Sons, Cape Alexander, Havana, 89 bls. cotton rags.

Atlas Waste Manufacturing Co., Cape Alexander, Havana, 10 bls. cotton waste.

A. Blank, Exchange, Port Said, 66 bls. rags.

New England Waste Co., Stockholt, Santos, 84 bls. cotton waste.

American Cotton Products Co., Stockholt, Santos, 1615 bls. picker waste.

National City Bank, Montevideo, Buenos Aires, 38 bls. cotton rags.

J. Eisenberg & Sons, Montevideo, Buenos Aires, 72 bls. cotton rags.

E. J. Keller Co., Inc., Exchester, Alexandria, 248 bls. old bagging.

Manufacturers Trust Co., Exchester, Alexandria, 204 bls. old bagging waste.

New England Waste Co., Rio Novo, Recife, 802 bls. cotton waste.

A. De Vries Trading Corp., Arnold Maersk, Antwerp, 98 bls. old scrap bagging.

J. Eisenberg, Agwicomet, Vera Cruz, 5 bls. wool rags.

A. De Vries Trading Corp., Ames Victory, Antwerp, 45 bls. old scrap bagging.

OLD ROPE

(———), Exchange, Calcutta, 769 bls. old hemp rope cuttings.

(———), Exminster, Calcutta, 120 bls. old hemp rope cuttings.

CASEIN

American Cyanamid Co., Westralia, Buenos Aires, 1000 bags (ground lactic).

Hercules Powder Co., Westralia, Buenos Aires, 2000 bags (ground lactic).

F. H. Paul & Stein Bros., Mormacsaga, Buenos Aires, 400 bags (lactic), 500 bags.

American Key Products, Inc., Mormacsaga, Buenos Aires, 600 bags (lactic).

American Cyanamid Co., Mormacsaga, Buenos Aires, 500 bags (ground lactic).

Paul A. Dunkel Co., Frederica, Buenos Aires, 1000 bags.

GLUESTOCK

National City Bank, Montevideo, Recife, 112 bls.

Chase National Bank, Montevideo, Buenos Aires, 220 bls.

WOODPULP

Price & Pierce, Ltd., Markland, Liverpool, N. S., 2742 bls. unbleached sulphite pulp.

WOODPULP BOARDS

Central National Bank, Agwicomet, Tampico, 492 rolls.

PHILADELPHIA IMPORTS

WEEK ENDING FEBRUARY 14, 1948

Herman Adlerstein, Exchester, Genoa, 56 bls. dark cotton rags.

National Casein Sales Co., Mormacsaga, Buenos Aires, 1061 bags lactic casein.

Perkins Glue Co., Mormacsaga, Buenos Aires, 508 bags casein.

NORFOLK IMPORTS

WEEK ENDING FEBRUARY 14, 1948

Elos Hansson, Inc., Abbedyk, Rotterdam, 239 rolls newsprint.

E. J. Keller Co., Inc., Ames Victory, Antwerp, 82 bls. old bagging.

Gypsum Declares Dividend

BUFFALO, N, Y. — Directors of National Gypsum Company have declared the regular quarterly dividend of $1.12½ a share on the preferred stock, payable March 1 to stock of record February 18.

TRENDS

(Continued from page 32)

Slight improvement in weather indicated a probable break in the winter's severity, and is seen as having as much effect on the flow of folded news as did the break in commodity markets, with a greater supply of this grade expected. Boston reports a steady market on folded news whereas New York and Chicago show strong demand, tight supply and a firm tone to the market.

Mixed and book continue in good demand with firm prices. High grades are stronger as the result of low supply of market pulp and diminishing inventories.

Probabilities of developing a good export trade on waste paper are being jeopardized, it is reported, by the low quality and inferior pack of waste paper used to fill export orders. Thus foreign outlets are discouraged from buying and orders are dropping off at a time when we may soon have more supplies than domestic consumers can use.

Cottons

Old rags continue strong as supplies remain tight. Roofing rags are in particularly firm position with further rises in price reported. Supplies of new cottons improve slightly, but with the decline in the commodity market and cautious buying of paper manufacturers, there was no pressure in this market and prices are unchanged. Old bagging is strong and prices upped despite the reported decline in Calcutta's burlap prices. Demand for these grades is well above supply.

Crawford is Guest at Albia Installation

ALBIA, N. Y.—Guests at the installation program of the local affiliated with the International Brotherhood of Papermakers included Dr. E. C. Crawford, president of the Albia Box and Paper Company, J. Leslie Snyder, vice president, Robert M. Phillips, secretary, and Joseph Addy, International secretary. Among the officers installed for the year were Arthur F. Durivage, president; Edward A. Stickles, vice president; Roy H. Riordan, treasurer, and Luella C. Kalbus, recording secretary.

Mayer Studies South America

BROOKLYN, N. Y. — Arthur Mayer, vice-president in charge of sales for Federal Adhesives Corporation, 640 Dean Street, is leaving on an extended tour throughout South America to study market conditions. Mr. Mayer is known throughout the adhesives industry for his constructive work in bookbinding, packaging, envelopes, boxes, etc. He was formerly manager of the specialties division, National Starch Products, Inc.

...For exceptional covering power, brilliance and strength...you need Du Pont MOLYBDATE ORANGE

Here's an outstanding pigment for your next coloring job—whether fancy printed paper, coated paper or twisting paper. It's a versatile color which blends well with either yellow or red—to give truly distinctive tones.

Molybdate Orange YE-428-D is standardized for both beater and coated paper uses. It can be used in flinting and frictioning—wets readily with water—mixes well with casein and other sizes—won't bleed in water. And it's best for economy—compared to either organic orange pigments or regular chrome orange pigments.

Ask your Du Pont salesman for details, or write . . .
E. I. du Pont de Nemours & Co., (Inc.), Pigments Department, 1007 Market Street, Wilmington 98, Delaware.

DU PONT PIGMENTS
FOR QUALITY PRODUCTION

DU PONT
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BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

Tune in to Du Pont "Cavalcade of America" Monday nights—8 P. M., EST, NBC.

PRICES

With the elimination of price controls on paper, pulp, rags and other materials, the quotations given below once more become indicative of trends in an open market. At the moment they can be of little more, for, while some volume business still is being done under contract at the figures given below, fluctuations representing special conditions are too varied and too frequent to permit prices to be given as representing a wholly stabilized market.

Paper

(Delivered New York)

Standard News, per ton—

Rolls, contract	$91.00 to		$96.00
Sheets	102.50 "		109.00

Kraft—per cwt.—Carload Quantities

Zone A Deld. 40 lb. base wgt.

Superstandard Wrapping	$9.00	to	—
No. 1 Wrapping	7.25	"	8.00
Standard Wrapping	6.50	"	—
Standard Bag	6.50	"	—

Tissues—Per Ream 24x36 (480) 11 lb Zone 1.

Wh. No. 1 Frd.	$1.84	to	$2.00
Wh. No. 1 M. G.	1.94	"	2.00
Wh. No. 1½	1.60	"	—
Wh. No. 2	1.75	"	—
Kraft Anti-Tar	1.65	"	—
Kraft Unbl.	1.85	"	—
Manila No. 2	1.62	"	—
Shred. Wh. No. 1 cwt.	1.10	"	1.50

Toilet—Per Case of 100 rolls—1 M Sheets

Unbleached	$8.50	to	$10.00
Bleached	8.50	"	10.00

Paper Towels—Per Case of 3750 Zone 1.

Wh. Jr. M'tif'd 9¼x9½			$5.15
Br. Sr. M'tif'd 10x12			3.60
Br. Jr. M'tif'd 9½x9¼			3.10
Br. Jr. Sgl. fold 10 x10¾			3.15

Manila—per cwt.—C-l. f.a.

No. 1 Jute Tag	$14.50	to	—
Reg. Jute Manila	13.25	"	$15.50
No. 1 Manila	9.75	"	—

Boards, per ton—

Plain News	$92.50	"	—
Filled News	94.00	"	—
Plain Chip	90.00	"	—
Sgl. Mla. J-d. Chip*	100.00	"	102.50
White Pat. Coated*	120.00	"	
Kraft Liners 42 lb.	100.00	"	—
Kraft Corr. .009	105.00	"	—
Binders Boards	126.00	"	

* Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 33-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following prices are representative of distributors' resale prices, all deliveries in Zone 1: Rag Content Bonds and Ledgers—

White, Assorted Items

	Bonds, per cwt. Carton	4 C't'n	Ton
100% Rag Ext. No. 1	$55.00	$50.80	$48.70
100% Rag	48.25	44.55	42.70
75% Rag	37.50	34.55	33.10
50% Rag	32.25	29.40	28.25
25% Rag	28.75	26.15	25.10

Ledgers, per cwt.

100% Rag Ext. No. 1	$55.00	$50.80	$48.70
100% Rag	48.25	44.55	42.70
75% Rag	37.50	34.55	33.10
50% Rag	32.25	29.40	28.25
25% Rag	28.75	26.15	25.10

Sulphite Bonds and Ledgers—White, Assorted Items

Bonds, per cwt.

No. 1	$21.25	$19.25	$18.50
No. 2	20.25	18.30	17.55
No. 4	19.25	17.55	16.85

Ledgers, per cwt.

No. 1	$21.75	$19.65	$18.85
No. 2	20.75	18.75	18.05
No. 4	20.00	18.10	17.35

Free Sheet Book Papers—White, Cased Paper

(Per cwt.)	Case	Ton
No. 1 Glossy Coated	$20.40	$19.50
No. 2 Glossy Coated	19.15	18.30
No. 3 Glossy Coated	18.40	17.60

(Per cwt.)	Case	Ton
No. 1 Antique (Watermarked)	$15.90	$15.15
No. 2 Offset	15.15 to 17.90	14.60 to 17.10
A Grade E. F.	14.90	14.25
A Grade S. & S. C.	15.40	14.65
B Grade E. F.	13.90	13.30
B Grade S. C.	14.40	13.70

Wood Pulp

Domestic mill contract prices delivered with varying freight allowances.

	Per Short	ADT
Groundwood	$80.00 to	$81.00
Unbleached Sulphite	124.00 "	—
Bleached Sulphite	125.00 "	135.00
Bleached Soda	130.00 "	—
Bleached Sulphate	175.00 "	185.00
Unbleached Sulphate Northern	125.00 "	155.00
Unbleached Sulphate Southern	130.00 "	145.00

Canadian Quotations

Prices delivered with varying freight allowances unless otherwise specified

	Per Short	ADT
Reg. No. 1 Kraft	125.00 "	—
Unbleached Sulphite	125.00 "	126.00
Bleached Sulphite	125.00 "	135.00
Glassine Unbleached Sulphite (no freight allowance)	120.00 "	—
Bleached Soda	130.00 "	—
Groundwood	80.00 "	85.00
Sideruns Pulping News	80.00 "	—
Hardwood and Specialty Grades	Nominal	

Swedish Quotations

On dock, Atlantic Ports

	Per Short	ADT
Bleached Kraft	175.00 "	185.00
Bleached Sulphite	175.00 "	185.00
Unbleached Sulphite	145.00 "	175.00
Unbleached Kraft	140.00 "	165.00

Finnish Quotations

On dock, Atlantic Ports

	Per Short	ADT
Bleached Sulphite	$185.00 to	—
Unbleached Sulphite	155.00 "	157.00
Unbleached Sulphate	147.50 "	—

New Domestic Cotton Cuttings

(F.O.B. Shipping Point Plus Dealer's Commission)

White Shirt	$12.00 to	$12.50
Unbleached Muslin	12.00 "	12.50
Light Silesias	9.00 "	9.25
White Back Blue Overalls	9.00 "	9.50
Blue Overalls	8.00 "	8.25
Fancy Shirt	6.00 "	6.25
Light Percales	8.50 "	8.75
Light Prints	7.50 "	7.75
No. 1 Washables	5.00 "	5.25
Bleachable Khaki	7.50 "	8.00
Unbleachable Khaki	6.50 "	7.00
Cottonades	5.50 "	5.75

Old Domestic Cotton Rags

(F.O.B. Shipping Point Plus Dealer's Commission)

	Per 100 lbs.	
No. 1 Whites Repacked	$5.50 to	$6.00
No. 1 Whites Miscellaneous	4.50 "	5.00
No. 2 Whites Repacked	3.50 "	3.75
No. 2 Whites Miscellaneous	3.00 "	3.50
Blue Overalls	3.75 "	4.00
Thirds and Blues Repacked	3.25 "	3.50
No. 1 Roofing Rags	2.10 "	2.15
No. 2 Roofing Rags	1.90 "	2.00
No. 3 Jute Bagging	1.75 "	1.85
No. 4 Brussels and hard back carpets	1.75 "	1.85
No. 5A Roofing Rags	1.75 "	1.85

New Foreign Cotton Cuttings

(Prices to Mill, F.O.B. Dock, N. Y.)

	Per 100 lbs.	
New Dark Cuttings	$5.50 to	$5.75
New Mixed Cuttings	6.25 "	6.50
Light Silesias	9.25 "	9.50
Light Flannelettes	9.25 "	9.50
New White Cuttings	12.00 "	13.00
New Unbleached Cuttings	12.25 "	13.00
Fancy Shirt Cuttings	6.50 "	7.00
Light Prints	7.75 "	8.00
Bleachable Khaki, No. 1	7.00 "	7.50
Unbl. Khaki, No. 1	6.25 "	6.75

Old Foreign Rags

(Prices to Mill, f.o.b. dock, N.Y.)

	Per 100 lbs.	
No. 1 White Linens	$14.00 to	16.00
No. 2 White Linens	12.00 "	13.00
No. 3 White Linens	8.00 "	9.00
No. 4 White Linens	8.00 "	9.00
No. 1 White Cottons	8.00 "	10.00
No. 2 White Cottons	7.00 "	8.00
No. 3 White Cottons	6.00 "	6.50
No. 4 White Cottons	4.00 "	4.50
Extra Light Prints	6.50 "	7.00
Old Light Prints	4.50 "	5.00
Med. Light Prints	4.00 "	4.50
Dutch Blue Cottons	5.25 "	5.50
Checks and Blues	4.00 "	4.25
Linsey Garments	2.60 "	2.75
Dark Cottons, European	2.50 "	2.60
Dark Cottons, Egyptian	3.00 "	3.25
Old Shopperies	2.20 "	2.30
New Shopperies	2.40 "	2.50

Bagging

(Prices to Mill, f.o.b. N. Y.)

	Per 100 lbs.	
Foreign Gunny, No.1	$6.00 to	$6.50
Domestic Gunny, No. 1	6.25 "	6.50
Light Wool Tares	6.25 "	6.50
Heavy Wool Tares	6.00 "	6.25
No. 1 Scrap Bagging	5.50 "	5.75
Roofing Bagging	2.00 "	2.25
Foreign Manila Rope	6.00 "	6.75
Domestic Manila Rope	6.50 "	6.75
Jute Strings	5.00 "	5.25
No. 1 Sisal Strings	5.25 "	5.50
Mixed Strings	1.75 "	2.50

Waste Paper

Base Prices to Mills for Average Packings

(Dollars Per Ton)

F.o.b. New York, Baled

No. 1 Hard White Envelope Cuts, one cut	155.00 to		165.00
No. 1 Hard White Envelope Cuts	145.00 "		155.00
No. 1 Hard White Shavings, unruled	145.00 "		155.00
No. 1 Hard White Shavings, ruled	110.00 "		130.00
Soft White Shavings, one cut	145.00 "		155.00
No. 1 Soft White Shavings	135.00 "		145.00
Soft White Shavings, Misc.	125.00 "		135.00
No. 1 Fly Leaf Shavings	45.00 "		—
No. 1 Groundwood Fly Leaf Shaving	35.00 "		—
No. 1 Heavy Books & Magazines	27.00 "		—
Mixed Books	15.00 "		20.00
No. 1 White Ledger	85.00 "		90.00
Manila Tab. Cards	9.50 "		11.00
New Manila Envelope Cuttings, one cut	100.00 "		110.00
New Manila Envelope Cuttings	65.00 "		75.00
Extra Manilas	25.00 "		30.00
Mixed Kraft, Env. & Bag Cuttings	75.00 "		85.00
Kraft Envelope Cuttings	110.00 "		—
Triple Sorted, No. 1 Brown Soft Kraft	65.00 "		75.00
New Kraft Corrugated Cuttings	80.00 "		85.00
No. 1 Assorted Old Kraft	55.00 "		60.00
New Jute Corrugated Cuttings	27.00 "		—
Old 100% Kraft Corrugated Containers	45.00 "		50.00
No. 1 News	20.00 "		21.00
No. 1 Mixed Paper	11.00 "		13.00
Box Board Cuttings	— "		—
White Blank News	75.00 "		85.00
Overissue News	23.00 "		24.00
Old Corrugated	26.00 "		28.00
Mill Wrappers	22.00 "		24.00

Twines

All Prices Nominal, F.o.b. Mill

(Soft Fiber)

Coarse Polished—India	.33¼ to		.35
Fine India	.38¼ "		.42½
Fine Polished—			
Unpolished—Paper Makers	.28½ "		.30½
Tube Rope	.29 "		.31½
Wrapping	.32 "		.35½
Cotton	.63½ "		.66½

(Hard Fiber)

Mex. Sisal	.21 "		.27
Manila (Reprocessed)	.30 "		.32

(American Hemp)

Polished Hemp	.36¾ "		.60
Unpolished	.32¼ "		.54

PHILADELPHIA

Domestic Rags (New)

(F.O.B. Eastern Shipping Point)

Shirt Cuttings—New White No. 1	.11 to		.12
New White No. 2	nominal		
Light Silesias	.07½ "		.08
Black Silesias, soft	.06½ "		.07
New Unbleached	.10½ "		.11¾
Washable Prints	.06½ "		.07
Washable No. 1	.05 "		.05½
Blue Overall	.07½ "		.08
Cottons—According to grades—			
Washable Shredding	.03½ "		.04
Fancy Percales	.06¾ "		.07¼
New Black Soft	nominal		
Khaki Cuttings—			
Unbleachable Cotton Cuttings	.06 "		.06½
Bleachable Cotton Cuttings	.07 "		.07½
Men's Corduroy	.05½ "		.06
Ladies' Corduroy	.05 "		.05½
Cottonades	.05½ "		.06

Domestic Rags (Old)

(F.O.B. Eastern Shipping Point)

White No. 1—Repacked	4.50 to		5.00
Mixed White	4.00 "		4.33
White No. 2—Repacked	3.50 "		3.75
Thirds and Blues—Miscellaneous	2.25 "		2.50
Repacked	2.75 "		3.00
Roofing Stock—Foreign No. 1	nominal		
Domestic No. 1	1.85 "		1.90
Domestic No. 2	1.75 "		1.80
Roofing Bagging	1.65 "		1.70
Old Manila Rope	6.25 "		6.50

Bagging

(F.O.B. Eastern Shipping Point)

Gunny No. 1—Foreign	nominal		
Domestic	4.75 to		5.25
No. 1 Clean Bright—Sisal Strings	.04½ "		.05
No. 2 Clean Bright—Sisal Strings	.03½ "		.04
Sisal Jute	.02¾ "		.03
Scrap—No. 1	5.00 "		5.50
No. 2	2.50 "		3.00

Wool Tares, heavy	4.75	" 5.00
New Burlap Cuttings	6.00	" 6.50

Old Papers

(F. o. b. Phila.)
Mill Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	$100.00	to $115.00
No. 1 Hard White Shavings, unruled	100.00	" —
Soft White Shavings, one cut	90.00	" 95.00
White Blank News	70.00	" 75.00
Soft White Shavings	80.00	" —
No. 1 White Ledger	85.00	" 90.00
Ledger, Colored	70.00	" 72.00
No. 1 Heavy Books & Magazines	24.00	" 26.00
Overissue Magazines	nominal	
New Manila Envelope Cuttings	80.00	" —
No. 1 Assorted Old Kraft	60.00	" 65.00
No. 1 Mixed Paper	11.00	" 12.00
Box Board Cuttings	10.00	" 11.00
Kraft Corrugated Cuttings	90.00	" 100.00
Old Corrugated	24.00	" 26.00
Overissue News	20.00	" 22.00
No. 1 News	13.00	" 15.00

BOSTON

Old Papers

(F.o.b. Boston)
Mill Prices, Baled

No. 1 Hard White Shavings, unruled	6.25	to 6.75
No. 1 Hard White Shavings, ruled	6.00	" 6.50
Soft White Shavings, Misc.	5.25	" 5.50
No. 1 Fly Leaf Shavings	1.75	" 1.85
No. 2 Fly Leaf Shavings	1.65	" 1.75
No. 1 Groundwood Fly Leaf Shavings	1.75	" 2.00
No. 2 Groundwood Fly Leaf Shavings	1.50	" 1.75
Mixed Colored Shavings	2.00	" 2.25
New Manila Envelope Cuts, one cut	4.50	" 4.75
Hard White Envelope Cuts, one cut	6.00	" 6.50
Triple Sorted No. 1 Brown Soft Kraft	3.75	" 4.00
Mixed Kraft Env. & Bag Cuttings	4.00	" 4.25
Kraft Envelope Cuttings	3.75	" 4.00
No. 1 Heavy Books & Magazines	1.25	" 1.75
New Manila Envelope Cuttings, one cut	—	" —
New Manila Envelope Cuttings	4.00	" 4.25
White and Colored Tabulating Cards	4.00	" 4.50
Groundwood Tabulating Cards	1.50	" 1.75
White Blank News	2.25	" 2.50
No. 1 Assorted Old Kraft	3.50	" —
No. 1 Mixed Paper	.65	" .75
Overissue News	1.00	" 1.25
Box Board Cuttings	.60	" .70
New Corrugated Cuttings, Kraft	2.75	" 3.00
Old Kraft Corrugated Containers	1.75	" —
Old Corrugated Containers	1.25	" 1.30
Jute Corrugated Cuttings	1.07½	" —
Paper Strings	2.00	" 2.25

Bagging

(F. o. b. Boston)

Gunny Bagging—		
Foreign	—	to 4.75
Domestic	—	" 4.75
Sisal Rope No. 1	6.00	" —
Sisal Rope No. 2	5.50	" —
Mixed Rope	5.25	" —
Mixed Strings	2.00	" 2.50
Transmission Rope—		
Foreign	(nominal)	
Domestic	3.00	" 3.50
Manila Rope—		
Foreign	(nominal)	
Domestic	6.25	" —
Soft Jute Rope	5.00	" 5.25
Jute Carpet Threads	6.00	" —
Bleachery Burlap	8.50	" 9.00
Scrap Burlap—		
Foreign	—	" 4.75
Domestic	—	" 4.87½
South America	5.25	" —
Wool Tares—		
Foreign	4.75	" —
Domestic	4.75	" —
Aust. Wool Pouches	5.00	" 5.25
New Zealand Wool Pouches	5.25	" 5.50
New Burlap Cuttings	6.00	" 6.50
Heavy Baling Bagging	5.25	" 5.75
Paper Mill Bagging	3.50	" 3.75
No. 1 Roofing Bagging	1.75	" —

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—		
New Light Prints	.08	to —
Fancy Percales	.07½	" .08
New White No. 1	.11	" .11½
New Light Flannelettes	.08	" .08½
Canton Flannels, Bleached	.10	" .11
Underwear Cutters, Bleached	.10	" .11
Underwear Cutters, Unbleached	.11	" .12
Silesias No. 1	.08	" .08½
New Black Silesias	.05	" —
Red Cotton Cuttings	.05	" —
Blue Overalls	.08½	" .09
Soft Unbleached	.11	" .12
Blue Cheviots	.08½	" .09
Fancy	.06	" —
Washable	.06	" —
Khaki Cuttings	.06½	" .07
Corduroy	.03½	" —
Khaki Canvas	.06¼	" .06
B. V. D. Cuttings	.10½	" .11

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—		
Repacked	3.80	to —
Miscellaneous	3.20	" —
White No. 2—		
Miscellaneous	2.65	" —
Twos and Blues, Repacked	2.20	" —
Old Blue Overalls	2.25	" 2.50
Thirds and Blues, Repacked	2.20	" —
Miscellaneous	1.80	" —
Black Stockings	3.50	" 4.00
Roofing Stock—		
No. 1	2.00	" —
No. 2	1.75	" 2.00
No. 3	1.35	" —
No. 4	1.35	" —
No. 5, Quality A	1.35	" —
Quality B	1.20	" —
Quality C	.95	" —
Old Manila Rope	6.00	" —

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal
Dark Cottons	(nominal
Dutch Blues	(nominal
New Checks and Blues	(nominal
Old Fustians	(nominal
Old Linsey Garments	(nominal
New Silesias	(nominal

CHICAGO

Waste Paper

(F. o. b. Chicago)
Mill Prices, Baled

Shavings—		
No. 1 Hard White Envelope Cuts one cut	$150.00	to —
No. 1 Hard White Shavings, unruled	140.00	" —
No. 1 Soft White Shavings	120.00	" —
No. 1 White Ledger	95.00	to —
No. 1 Heavy Books & Magazines	30.00	" 35.00
White Blank News	80.00	" 85.00
Mixed Kraft Env. & Bag Cuttings	80.00	" 90.00
No. 1 Assorted Old Kraft	35.00	" —
Overissue News	27.00	" —
No. 1 News	23.00	" —
No. 1 Mixed Paper	15.00	" —
Old Corrugated	25.00	" —
Mill Wrappers	16.00	" —

MARKETS

BLANC FIXE — Demand continues strong. Price firm following price rise on by-product. Pulp is currently quoted at $85 in bags, car lots at works, 6 cents per lb., l.c.l., deld.; by-product $75 per ton, car lots at works, 6 cents per lb., l.c.l., deld.

BLEACHING POWDER—Market near a balance. Supply improves. Prices range from $3.75 to $4 per 100 pound drums, l.c.l., works.

CASEIN — Market approximately unchanged. Slight softening on imported product. Domestic production unsettled. Stocks inadequate. Current prices on processed acid precipitated casein at 33 to 35 cents per pound for domestic grades and 29 to 30 cents for imported grades, f.o.b. shipping point.

CAUSTIC SODA — No improvement in supply. Export price regulation aimed at "black marketing." Solid caustic is reported at $2.85 per cwt.; flaked and ground is quoted at $3.25 per cwt. in 400 pound drums, $3.75 per cwt. in 100 pound drums—car lots at works; liquid 50% in tank cars at $2.25 per cwt.; liquid 73% in tank cars at $2.35 per cwt. at works.

CHINA CLAY—Domestic grades in good supply. Filled is $9 to $11.50 per ton, car lots; coating clay is $14 to $22. Imported clay quotation, short tons, $16 to $35, export warehouse. Supply improved.

CHLORINE—Supply condition slightly eased. Deliveries restricted by slow rolling of tank cars. Prices unchanged. Currently quoted at $2.25 per cwt. in single unit tank cars, at $2.55 to $3.75 per cwt. multi-unit tank cars, f.o.b. works.

ROSIN—Trading dull. Prices firm. Active foreign inquiry. Gum rosin in drums per 100 pounds net in yard. New York car lots B, D, $9.75; E, F, $10.50; G, H, I, K, M, N, $10.75; WG, $11.10; WW, $11.20. Wood rosin, per 100 pounds, net, f.o.b., l.c.l., N. Y., B, $6.45; FF, $7.95; G, H, I, K, M, $10.37; N, $10.64; WG, $10.95; WW, $11.08.

SALT CAKE—Demand continues ahead of supply with slight improvement in shipments. Prices unchanged. Weather hampers shipping. Domestic salt cake is quoted at $20 to $26.

SODA ASH—Demand easier though supply is tight. No box cars available for bulk shipments. Shipments only against contracts. Current prices, car lots, per 100 pounds: in bulk, $1.10; in paper bags, $1.30; and in barrels, $1.70.

SODIUM BICARBONATE—Shortage of box cars delays shipment. Supply approximately abreast the demand. Reported as $1.85 per cwt. paper bags, carload lots.

STARCH—Market easier with slackened demand. Production improved considerably. Prices firm. Pearl grade quoted at $7.06 per 100 pounds; powdered starch at $7.27 per 100 pounds; car lots, New York.

SULPHATE OF ALUMINA—Prices unchanged. Supply steady. The commercial grades are quoted at from $1.15 to $1.30 per 100 pounds, in bags, car lots, f.o.b. works. Iron free is $2 per 100 pounds in bags, car lots, at works.

SULPHUR—Supplies ample. Prices unchanged. Annual contracts are quoted at $16 to $18 per long ton, f.o.b. mines; the price f.o.b. at Gulf ports is $17.50 to $19.50 per long ton.

TALC—No change in domestic market. Demand far in excess of supply. Domestic grades are currently quoted at $21 per ton in mines; Canadian at $35 and up per ton. All prices in car lots.

TITANIUM DIOXIDE — Demand strong. Extremely tight supply with no early easing seen. Anastase 17½c lb. carload lots, 18-18½c l.c.l.; rutile, 19½c lb. carload lots, 20-20½c l.c.l.; 50-lb. bags, f.o.b. plant, minimum freight allowance.

DIGESTED

During the difficult years of war, we all acquitted ourselves most creditably. The professions, with manpower greatly depleted, were still able to service the greatest demand for visual service that the world has ever known. Similarly, despite the needs of military production, manufacturers were able to meet this accelerated demand, with record deliveries of lenses and frames.

In the two years that have elapsed since V-J Day, much of the pent-up demand has been satisfied. The easy dollars have been spent. Some distribution pipe lines have been filled. The mad merry-go-round of postwar demand shows signs of slowing down.

Timely, then, the question, "Where do we go from here?"

To be sure, we cannot expect a continuously climbing curve. Undoubtedly, it will be a succession of peaks and valleys in conformity with general business. But if we can correctly interpret the various factors involved, the trend over a period of years should show a constant growth . . . for the industry, for the professions, for better eyesight for more people.—BEN RAMAKER, Vice-President, Bausch & Lomb Optical Co., in Bausch & Lomb Magazine.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1948		Corresponding Weeks—1947	
January 3	100.3	January 4	96.3
January 10	99.4	January 11	102.6
January 17	99.9	January 18	103.8
January 24	101.1	January 25	103.7
January 31	103.6	February 1	104.0
February 7	98.9	February 8	106.2

COMPARATIVE MONTHLY SUMMARIES

1947		Apr.	105.1	Aug.	104.2	Dec.	101.5
Jan.	102.1	May	106.2	Sept.	102.0	Year Avg.	104.3
Feb.	105.9	June	106.0	Oct.	109.5	1948	
Mar.	106.1	July	93.5	Nov.	109.3	Jan.	*100.9*

COMPARATIVE YEARLY SUMMARIES

	1941	1942	1943	1944	1945	1946	1947	1948
Year to Date	86.5	104.1	87.4	88.7	86.4	95.4	103.7	*100.6*
Year Average	97.4	90.4	87.8	88.1	89.4	101.1	104.3	

PAPERBOARD OPERATING RATIOS†

Current Weeks—1948		Corresponding Weeks—1947	
January 3	78	January 4	85
January 10	99	January 11	102
January 17	104	January 18	103
January 24	104	January 25	101
January 31	103	February 1	102
February 7	*100*	February 8	104

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1947	99	103	101	100	101	101	90	99	96	101	99	89	98
1948	99												

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

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EDITORIAL

The Week Ahead

New York City next week extends its well-practiced hand in welcome to a crowd of old friends whom it is glad to see again, invites them to fill the lobbies, the suites and the meeting rooms of its Waldorf-Astoria and its Commodore, and the guest rooms of other nearby hotels.

The week promises to be rich in its rewards to those who are able to be here. A full schedule of meetings has been set up both by the American Paper and Pulp Association, and by the Technical Association of the Pulp and Paper Industry. Details of these meetings have been recorded in the news of the past few weeks. Resumption by the APPA of its annual convention-end banquet would appear to erase the last trace of war-time restraint from the program of this association. Otherwise, and more pervadingly important, the meetings, collectively, present a picture of an industry that is trying to meet all the demands on its facilities, to expand those facilities along sound lines, and to avoid the pitfalls that always seem to lurk in the shadow of unbridled optimism.

Future demand is a problem. People are using more paper per capita than once was regarded as normal; and there are more people. How much of this may be attributed to abnormally high buying is still to be weighed accurately, and how much will remain if buying habits change is to be appraised.

Future production must be approached thoughtfully too. It would be simple to boost outputs immediately if mills could be built and timber cut overnight. And it would be financially safe to do so if the increased capacity could be made to vanish, without cost and without effort, once the excess demand were filled.

Replacements, even, have become a pressingly heavy problem. A machine that was bought fifteen years ago cannot now be replaced for the amount that was permitted, under regulations, to be set aside each year against the day when it should have to be retired in favor of a new equipment.

All the while the industry is pressing its efforts to make better paper, to make paper more useful to more people, and to make it at lower manufacturing costs.

These things in general, and a long list of specific subjects in particular are on the agenda of the pulp and paper industry next week. New York with all its splendor, with all of the remote corners that it can offer the explorer, and with all of its experience and skill at entertaining the visitor, this time relaxes with a sigh of relief. Here comes a convention that not only is entirely capable of putting on a super show and running it expertly: it is a convention of compelling interest for those whose lives are devoted to the winding and unwinding of the future of paper.

Surplus

Many will agree with the correspondent who writes that something should be done about the word surplus. Its looseness as a symbol has been accented of recent months, he declares, because standing there stark and swollen in the tabulation of an annual report it easily leads to all kinds of trouble. The buyer thinks he is being overcharged; the employe is sure that he is being underpaid. To varying degrees, but always with a great deal of certainty, trouble is fomented.

Specifically applauding R. M. Fowler's interpretation of the term surplus, in his address before the Canadian Association at the end of last month, this writer goes on to urge that some one find a clearer meaning to express the thought that the word now covers. Some other term, he argues, should be used to cover property, machinery, funds that cannot be put into any specific category. Surplus, he points out, to the rank and file means something more than is now needed. A flood brings a surplus of water; most the East has had a surplus of snow; in the summer we often have a surplus of heat.

But, an overproduction of food cannot be regarded as surplus, so long as there is emergency need for it in Europe, he goes on. Why, then, isn't it equally misleading, to a layman to label as unneeded, a share of earnings that must be taken, eventually, from profits, and used to make up a deficiency elsewhere in the overall operating picture?

Sign at Work

Congressmen, as those who have known them are thoroughly aware, are quite as human in their reactions, when they are not engaged in their occupation, as is the remainder of the human race. Most of them had the same early experiences, grew up and went to the same kind of schools, and endure many of the same daily tribulations as the rest of us.

This is all by way of paying tribute to the unknown author of a roadsign along a Florida highway for the effective restraint with which he phrased a warning—effective in that its effect was stronger than several thousand words might have been on the same theme. Representative Everett Dirksen of Illinois, chairman of the sub-committee on appropriations of the House Appropriations Committee, confided the other day that he had been powerfully impressed—so powerfully, indeed, that he considered the phrase one of the best arguments he ever had seen for conservation. "Caution—Trees at Work" the sign read.

W. L. Cook

Editor

DOW LATEX 512K

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to give you...

IMPROVED PAPER COATINGS AT LOW COST

High quality clay coatings for paper, made with Dow Latex 512K and starches, are an economical reality today. Papers coated with these blends have outstanding advantages in the press room.

Compared with straight starch coatings, blends of starch and Dow Latex 512K yield better paper gloss, improved gloss printing, and a greater degree of water resistance. There is reduced penetration of overprint varnishes. Papers coated with these preparations are also noticeably easier to handle.

Clay coated papers ordinarily finished with a casein binder can now be prepared with Dow Latex 512K-starch blends replacing all of the casein. Despite their economy, these papers show excellent qualities. Other useful blends combine either casein or soya flour with Dow Latex 512K.

Further information on the use of Dow Latex 512K—now readily available—can be obtained through any Dow office.

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SECTION OF THE

TECHNICAL ASSOCIATION
OF THE PULP AND PAPER INDUSTRY

122 E. 42nd ST., NEW YORK 17, N. Y. *Edited By R. G. MACDONALD, Secretary*

Summary of TAPPI Convention Papers

From the Program of Convention Week at Hotel Commodore, New York, February 23

10:00 A.M. GENERAL SESSION (Grand Ball Room)
W. F. Gillespie, President TAPPI, Chairman

1. SECRETARY'S REPORT—R. G. Macdonald

2. PRESIDENT'S ADDRESS—W. F. Gillespie

3. TELLERS REPORT

4. JOINT TEXTBOOK COMMITTEE REPORT

5. THE DEPARTMENT OF INDUSTRIAL COOPERATION AT THE UNIVERSITY OF MAINE—L. C. Jenness

The part of a typical State University to foster and develop research in cooperation with industrial companies is considered and the objectives and organization of the Department of Industrial Cooperation at the University of Maine is described.

The sponsor agrees to finance the cost of the investigation including a carge for salaries, supplies, special equipment, depreciation, and overhead, while the University provides the space, stock equipment, and personnel. The results are the sole property of the sponsor and are not published without out his approval.

6. THE PATENT OFFICE—Lawrence C. Kingsland

2:00 P.M. MICROBIOLOGICAL CONTROL METHODS (West Ball Room)
J. W. Appling, Chairman

1. FOAMING PROPERTIES OF CHLORINATED PHENOLS—C. R. Haefele

The use of sodium pentachlorophenate (Dowicide G) as a microbicide in water systems such as conditioning units, humidifying units, and beaters, sometimes results in the production of foam which seriously handicaps the efficiency of the system. Investigation of this foaming problem revealed that pH of the water and concentration of the chemical are the contributing causes. Experiments are described in which Dowicide G was held at various pH values to evaluate the foam produced. It was found that in a pH range of from 7 to 10 a heavy foam resulted when a stream of air was introduced into the solution. From pH 6 to 7 there was no foam, and from pH 6 to 1.5 the acid phenolic form precipitated which resulted in a heavy stable foam. Therefore, if a water system can be maintained at pH 6 to 7 using Dowicide G no foam should result. It was found, however, that the system is not stable at that pH range and tends to drift over a period of time into a foam forming pH value of from 7 to 8.

Since the use of Dowicide G would be eliminated in some cases because of this pH drift, attention was turned to other substituted phenols which are manufactured as microbicides. Dowicides A, B, C, D, E, and F were tested. It was found by a simple foam test that these compounds differ considerably in their foaming ability. The nonfoaming pH range differs and the pH values at which a precipitate forms varies from one compound to another. It is felt that by use of a table which gives the foaming properties at different pH values and the pH at which precipitation occurs, that a microbicide can be selected to better advantage. Tests would necessarily have to be conducted on the bactericidal efficiency of the microbicide against the particular organisms in the system being considered. Since these compounds are all generally efficient against the common water organisms the consideration of foam prevention becomes one of the most important factors.

2:00 P.M. CONTAINERS (East Ball Room)
W. B. Lincoln, Jr., Chairman

1. INSTRUMENTAL AND OPERATIONAL VARIABLES OF THE (JUMBO) MULLEN TESTER—R. C. McKee, Carlton Root, and Lewis B. Ayers

In view of the widespread popularity and use of the bursting strength test, an extensive study of this property as related to paperboard and paperboard products has been undertaken at The Institute of Paper Chemistry for two sponsors of its work—namely, the Fourdrinier Kraft Board Institute and the Jute Research Group. The present progress report is concerned with an investigation of some of the instrumental and operational factors which may influence the bursting strength results obtained with the Jumbo Mullen tester.

The results indicate that the accuracy of the pressure gages may markedly influence the bursting strength results. In calibrating bursting strength gages, it is advisable to remove all the air from the gage and to adjust the rate of needle travel of the gage being calibrated to approximate the rate of needle travel during an actual bursting strength determination.

The pressure required to extend the rubber diaphragm is both a significant and a variable factor in bursting strength testing and a standardization procedure is recommended.

Studies of the effect of rate of loading indicate that, in the normal range of testing speeds, it requires a variation of 30 to 35 cc./min. in the pumping rate to produce approximately a 1% change in the test results.

One of the most controversial factors in bursting strength testing is the effect of air in the hydraulic system. The experimental work indicates that it is advisable to exclude all air from the hydraulic system.

It has been found that the initial clamping pressure used to hold the test specimen during a test may have an appreciable effect on the test results for both combined and uncombined board. Also, the results obtained with a stress-time recorder indicates that the two facings of corrugated board do not rupture simultaneously. Consequently, "double-pops" are almost invariably encountered in making bursting strength tests on corrugated board; however, such "double-pops" are not always audible.

2. LOAD CONCENTRATION IN CORRUGATED PAPER—J. H. Toulouse and Paul J. Barcus

3. PROGRESS REPORT ON THE TESTING PROGRAM OF THE SHIPPING CONTAINER INSTITUTE—W. B. Lincoln, Jr.

4. A METHOD FOR THE DETERMINATION OF THE RESISTANCE OF PAPER AND PAPERBOARD TO PENETRATION BY FUNGI—B. F. Shema

In the packaging of food for the armed forces, it became desirable to evaluate the resistance of the carton to the penetration of fungi.

A method was developed whereby an inoculum of a fungi, *Chaetomium globosum,* is placed in a cut-out from the center of a specimen board which is then sealed both sides with the sample board in a sandwich arrangement. The time and extent of penetration is noted during an incubation period.

Tuesday, February 24, 1948

9:15 A.M. Acid Pulping (Room B-C)
George H. McGregor, Chairman

1. SULPHITE SEMICHEMICAL PULPING OF CHIP SCREENINGS—L. C. Jenness and G. L. Nystrom

Results obtained by the digestion of various size chip screenings with sulphite acid are presented. Although the cooking medium was acid in all cases, a comparison between the presence of ammonium and calcium bisulphite was obtained. Data are presented on the nature and yield of pulp resulting from acid of various strengths and varying times of cooking. Yields of approximately 70% are reported with little difference in yield resulting from calcium and ammonium base acids. The required cooking time is an inverse function of the acid strength. The resultant fiber is satisfactory for wrapper, liner, or board.

2. REVIEW OF THE STATUS OF BYPRODUCTS FROM SULPHITE PULPING—Harry F. Lewis

3 MODERN PRACTICE IN SULPHITE MILL ACID AND RECOVERY PLANTS—F. J. Hoar

An outline of the process arrangement for sulphite acid preparation is given. Current acid producing methods emphasize control of the composition of raw and cooking acids. Countercurrent absorption towers, at atmospheric and higher pressures, offer this control in the preparation of raw acid and cooking acid. Raw acid is pepared in the acid plant while cooking acid is a product of the recovery plant. Economics of acid making are presented.

Acid storage should not be affected by atmospheric conditions. Cooking acid should be of any desired chemical balance or composition and retain recovered raw materials from the cooking process. Acid making should be a closed cycle process.

4. RECENT DEVELOPMENTS IN SULPHITE PULPING—John F. Inderdohnen

Considerable experience has been gained since the advocacy by the writer of forced circulation for sulphite digesters since 1940 and 1942. Some mills such as the Ontario Paper Co. at Thorold, Ontario and Spruce Falls Power & Paper Co. at Kapuskasing, Ontario are producing as much as 50% more pulp per digester due to the use of such systems.

A controlling factor in the increased digester yields is a close control of the cooking acid strength. The trend is toward using acids of 7½ to 8% or higher where digester pressures permit.

Factors involved in attaining the high acid strengths are:

1. High SO_2 gas strength:

Sulphur burner systems are being designed to secure 18½ to 19½% SO_2 gas as against maximums of 17% by other systems.

2. Efficient SO_2 gas cooling:

By the use of the Chemipulp-KC Spray Type SO_2 Gas Cooler efficient cooling of the SO_2 gas with a minimum SO_3 formation is practical. The gas is also washed free of foreign materials and sublimed sulphur.

3. Strong, uniform raw acid:

The modern Chemipulp-KC Milk of Lime Acid System which may be operated under pressure allows for making uniform acid with a close control of combined under all temperature conditions.

4. Independent recovery of the SO_2 from acid storage and relief recovery tanks:

All "over" and "reclaimed" gases are isolated from the burner air intake resulting in readily controllable operation of the burner and acid makeup system.

5. Proper recovery of digester relief gases and heat:

The Chemipulp Hot Acid System in general use gives maximum digester relief absorption and with the Independent Recovery System mentioned above makes maximum use of all available relief gases from all sources as well as of the heat from the digesters.

With such systems sulphur requirements per ton of pulp are reduced to 190 to 200 pounds per air dry ton as well as increasing pulp brightness.

9:15 A.M. Papermaking (Fourdrinier) (Grand Ball Room)
B. E. Kassing, Chairman

1. THE EFFECT OF FOURDRINIER OPERATING VARIABLES AS RELATED TO SULPHITE PAPERS—Noel Phillips

2. STOCK PREPARATION CONDITIONS AFFECTING FORMATION—Fritz Klein

3. STOCK PREPARATION EFFECTS ON FORMATION—T. M. Barry

9:15 A.M. Graphic Arts (East Ball Room)
R. H. Simmons, Chairman

1. REPRODUCIBLE GLOSS STANDARDS—Daniel Smith and Marie M. Mahoney

Any truly adequate instrumental study of the gloss of a surface, as determined by the angular reflectance characteristics of the surface, must be goniophotometric. It is generally understood and agreed that measurement of the variation in reflectance from a surface as a function of the angles of incidence and illumination provides necessary data for the specification of gloss. However, a major shortcoming of the goniophotometric method is the complete lack of psychophysical information which would indicate the manner in which gloss might be computed from the goniophotometric data.

Harrison has pointed out that psychophysical correlations are urgently needed for the development of adequate instrumentation for the measurement and specification of gloss. He says further, "We are . . . compelled to make visual estimations the ultimate arbiter in deciding the best method of gloss measurement . . ."

As part of a program to study the psychological aspects of gloss for the primary purpose of making correlations with physical measurements, a technique has been developed for the preparation of reproducible replica gloss standards. These standards can be prepared at almost any gloss level. The number of replicas which can be prepared from any original standard is practically limitless, and they appear identical by visual and instrumental examination.

Because of the lack of necessary information for the development of adequate instruments for the measurement and specification of gloss, a decided advantage may be gained by using visual methods for the direct comparison of samples with rigidly controlled reference standards. If desirable, these standards could be prepared in large enough quantities to enable the whole industry to talk the same language. Certainly, at present, such visual methods must be "the ultimate arbiter," because none of the existing instrumentation can be proven adequate.

1. GLOSS RECORDER WITH AUTOMATIC STANDARDIZATION—Richard S. Hunter

A 75% gloss exposure head has been designed for gloss measurements. In the laboratory this head may be used with a slide-wire measuring device. This same exposure head may be used in the mill to give continuous records of gloss. It is operated in conjunction with a specially modified recorder of the type that is widely used in many process measurement and control problems. To obtain continuous measurements of gloss, a method of keeping this apparatus

in calibration had to be devised. For this automatic standardization, use was made of part of the balancing mechanism normally incorporated in the recorder for temperature measurements. This balancing mechanism consists of a switch, adjusting slide wire, and standard cell that operate at regular intervals to bring about adjustment of the reference potential of the instrument. The new gloss measuring device employs a current-balancing, not a potential-balancing procedure; thus the standard could not be employed to calibrate the instrument. However, the switch and adjusting slide wire were combined with a selenoid-operated shutter and standard beam of light to keep the gloss recorder continuously in calibration. Results from the gloss recorder will be shown.

3. THE RELATION OF PAPER AND INK IN HIGH SPEED PRINTING—E. R. Duffie

4. TESTING PRINTABILITY OF PAPER WITH INK —Otto P. Berberich

9:15 A.M. Fibrous Agricultural Residues (West Ball Room)
S. I. Aronovsky, Chairman

1. ARUNDO DONAX PULP—W. F. Gillespie

2. NEUTRAL SODIUM SULPHITE FOR DIGESTION OF STRAW FOR CORRUGATING STRAWBOARD—B. Franklin Stahl

The use of sodium sulphite for cooking agricultural residues is relatively new to the industry. Its chief advantages are claimed to be: a reduction in the use of lime with its attendant advantages on the paper machine, and through the absence of caustic soda the hemicelluloses are not dissolved from the straw or other residue, thereby making for a better yield from the pulp.

Several mills are now regular users of sodium sulphite. Others have tried it experimentally and reverted to their former cooking procedures. An analysis is here attempted, to show why or why not certain mills have discontinued its use.

Refining practices and running qualities are mentioned along with results of physical tests wherever they have been included in reports sent in to the author from the mills. No data have been compiled on mills running agricultural residues other than straw because those mills contacted have, with one exception, failed to return a report at any time.

It is readily understood that the cost of running a sodium sulphite cook will vary between mills. All mills show a considerably increased chemical cost per ton of board when using this compound and further cost analysis will have to be worked out to justify such added expense.

3. COMBINED WHEAT STRAW AGAIN INJURIOUS TO CLOVER SEEDINGS—C. J. Willard

Repeated experiments by the Ohio Agricultural Experiment Station have shown that combined wheat straw, if not removed, causes a reduction in the stand and yield of clover and alfalfa sown in the wheat. As a 3-year average, the yield of clean mixed alfalfa and clover hay the following year on areas where the straw was left untouched after combining was almost exactly half of the yield where the stubble was mowed immediately after combining and the straw and stubble taken off.

If the farmer has need for this straw on the farm as bedding or mulch, that should be its first use. However, there are many farms on which there is no need for such use of the straw. On such farms the straw may well be sold to the paper industry provided the price received pays the cost of taking it off and baling it, and the amounts of phosphorus and potash which are removed in the straw are purchased in commercial form and returned to the land.

Soil conservationists rightly claim that every particle of organic matter that can be added to the soil should be used in this manner. The maintenance of organic matter in the soil is the most important single soil problem of Corn Belt farmers. However, combined straw left on the top of a new seeding of alfalfa and clover does not add organic matter to the soil. Long before the field is plowed this straw has rotted and disappeared as completely as if a match had been set to it. Meanwhile its presence has resulted in reduction or complete destruction of the stands of these soil-building legumes. These legumes add to the soil far more organic matter of better quality than would be added by the straw even if it were plowed under immediately after combining. To lose the stands of these high quality legumes in the vain effort to save a little straw is bad management.

The stubble should be cut low, (not high) as soon after combining as possible, and everything removed. Raking and removing the loose combined straw only may be sufficient to save the clover stand in some years but is not in others. For sale to the paper companies it is much more desirable to mow the stubble first since the stubble contains more cellulose than the loose combined straw.

Experience shows that the often expressed fear of "exposing tender legume seedings to the summer sun" by this mowing or clipping are entirely groundless. In ten years' observations we have had no damage to legume stands from this source and one of these years was the driest July in the history of the Columbus Weather Bureau.

If, after this early clipping, conditions are favorable for a heavy growth of clover and/or weeds, this growth should be removed by September 1, not later. If only a light growth is made, nothing more needs to be done after the July clipping.

Observations indicate that the damage to clover stands, just described, is due to some effect of excessive organic matter on top of the plants. Any amount over about one ton per acre seems to result in injury. This organic matter may be wheat straw, weeds, clover growth, or any combination of these three. The loss being discussed is not due to smothering of the clover by the straw immediately after harvest, though this can happen with heavy straw. Neither is it due to field mice, although the latter have severely damaged clover on which a considerable amount of organic matter is left. The exact reason for the loss is not known, but the appearance is one of a disease favored by the accumulated organic matter on top of the crowns.

4. ANAEROBIC DECOMPOSITION OF STRAWBOARD WASTES—Don E. Bloodgood and J. C. Hargleroad

The losses of solid matter in the processing of straw amounts to about 30% of the total raw material shipped to a mill. Of the material lost in wastes, a large part of it is organic in nature and serves as food for micro-organisms. A very large portion of the organic matter is colloidal or dissolved and cannot be removed by sedimentation; consequently, there remains a very strong waste even after settling. There are two methods used for removing dissolved organic matter: (1) chemical coagulation, and (2) biological conversion. The first was investigated and found to be expensive and did not produce an effluent that could be discharge into a small stream. The trickling filter has been effective in treating some of the strong wastes of other industries and would, it was believed, be economical and efficient in treating strawboard waste. Tests were run on a pilot plant trickling filter at the No. 2 mill of the Terre Haute Paper Company for nine months in 1946-1947 and it was concluded that it was not possible to obtain effluents with B.O.D.'s below 139 if the filter was loaded heavier than 0.55 pounds per cubic yard per day. Such low loadings and high B.O.D. effluents lead to the conclusion that the trickling filter was not effective or efficient in the treatment of strawboard waste.

Returning to laboratory studies, investigations were carried on to determine the effectiveness of anoerobic treatment of strawboard wastes. Early tests had indicated possibilities with this type of waste treatment. A small laboratory digestion tank was operated for ten months on settled strawboard wastes. During this period the digestion tank was operated at 37, 30 and 25° C. The quantities of material added were varied so that a range of loadings and digestion periods could be obtained. An effluent with 66 p.p.m. of B.O.D. was obtained while operating with a 1.5 day detention period at a temperature of 37° C. and with an influent B.O.D. of 954 p.p.m. The quantity of combustible gas produced amounted to 660 ml. per gram of B.O.D. removed. Data at the other digestion temperatures show the effect of temper-

ature upon the rate of decomposition. At the 25° C. temperature (the temperature of straw mill wastes) rapid rates of B.O.D. reduction were obtained. It is expected that a pilot plant will be built to try out on a larger scale the operation of this promising process of strawboard waste disposal.

2:00 P.M. Research Development (Room B-C)
Roy P. Whitney, Chairman

1. NITRATION OF WOOD PULP—INFLUENCE OF THE PHYSICAL CONDITION OF PULP AND OF THE SPECIES OF WOOD—Milton O. Schur and Douglas H. McMurtrie

The huge demands of our armed forces for smokeless powder during World War II were satisfied on a wood pulp basis. In the United States and in Canada, split chips of drier board were nitrated by the mechanical dipper process; in Canada, pulp was nitrated also as specially prepared shreds by the Thomson displacement process.

The quality and the cost of the nitrocellulose, as well as the smoothness of the manufacturing operations, are influenced by the form in which the wood pulp is prepared for nitration and by the species of wood from which the pulp has been liberated. Thus when wood pulp is shredded at a moisture content of about 50%, then is dried and nitrated, the fibers part with spent acid in the acid centrifuge (wringer) more readily than when the pulp is nitrated in the form of fluff, chips, or flakes. Similarly, pulp made from wood comprised of fibers of relatively large cross section (e.g., western hemlock or slash pine) retains less spent acid in the centrifuge than does pulp whose fibers are small in cross section (e.g., spruce or balsam fir).

Data obtained in the examination of a variety of coniferous wood pulps indicate that the behavior of a pulp in the acid wringer and of the beaten nitrocellulose in the poacher can be predicted from a determination of the number of fibers of pulp per unit volume of test sheet: the lower the number, the more suitable the pulp.

The beaten nitrocelluloses lend themselves more readily to dehydration in the press the lower the number of fibers per gram of unnitrated pulp.

Acid retention and rate of settling of beaten nitrocellulose are favorably affected if, in the purification of the wood pulp, sufficiently strong solutions of caustic soda are used to reduce the packing tendency of the fibers.

2. THE EFFECT ON PULP QUALITY OF THE STEPWISE REMOVAL AND REPLACEMENT OF THE HEMICELLULOSES FROM ASPEN HOLOCELLULOSE—Robert Eugene March

Aspen holocellulose was extracted with potassium hydroxide to effect stepwise removal of the hemicelluloses; the fibrous residues were converted into handsheets for testing. Within a certain hemicellulose range, these sheets showd certain maxima and minima in physical properties. Thus the maximum bursting strength, minimum opacity, and minimum tearing strength were found in sheets prepared from holocellulose containing about 20% alkali-extractable hemicelluloses. The rate of beating was most rapid when the hemicellulose content was about 26.5%. The extracted holocellulose pulps were compared with a bleached aspen kraft pulp (three-stag bleaching operation). In general, the former possessed a far greater bursting strength and the latter a much higher tearing resistance.

Difficulties were encountered when attempts were made to reintroduce the extracted hemicelluloses into the fibrous holocellulose residues. The addition of small quantities of hemicelluloses increased the bursting strength slightly; very large amounts did not improve pulp strength.

3. COMPOSITION CHANGES OCCURING DURING VACUUM EVAPORATION, STEAM STRIPPING, AND DEASHING OF AMMONIUM SULPHITE WASTE LIQUORS—Aaron E. Markham and Joseph L. McCarthy

By vacuum evaporation of ammonium sulphite waste liquor, no nitrogen is removed but it is found that some nitrogen is present in the liquor combined in such a manner that it is not readily released by boiling under mildly alkaline conditions; some calcium sulphate crystallized out during evaporation of the samples used. Steam stripping of ammonium sulphite waste liquors proceeds more slowly than is the case with calcium liquors and leads to a marked reduction in "loosely combined sulphur dioxide," a decrease in acidity, and substantially no change in reducing sugar concentration. By deashing, nearly all the ammonium or calcium ions present in sulphite waste liquor can be replaced with hydrogen ions.

4. THE PYROLYSIS OF AMMONIUM SULPHITE WASTE LIQUOR TO YIELD AMMONIA—Aaron E. Markham, Quintin P. Peniston, and Joseph L. McCarthy

A method proposed in the literature for the recovery of ammonia from ammonia base sulphite waste liquor has been investigated experimentally. Conditions have been found under which around 90% of the ammonia can be recovered. These conditions include the use of temperature of around 600°C. or over, a humid gas to sweep out the volatile products, and, preferably, a rapid rate of heating. Sulphur is collected in the absorbers in a form that is not directly reusable and may complicate the reuse of the ammonia.

A mechanism for the reactions involved is discussed.

5. THE SOLUBILITY OF SULPHUR DIOXIDE IN AMMONIUM BISULPHITE SOLUTIONS—D. E. Marriner and Roy P. Whitney

Experimental results are presented on the solubility of sulphur dioxide in ammonia-base cooking acid solutions. Sulphur dioxide pressures up to approximately one atmosphere, combined sulphur dioxide concentrations of 0.5, 1.0, 1.4, and 2.0 grams per 100 grams of water, and temperatures of 4.5, 10.0, 18.0, and 25.0° C. were investigated. The data were obtained in a constant-pressure flow system, in which, for each run, a gas of fixed sulphur dioxide content was bubbled through a cooking acid solution until equilibrium between the two phases had been established.

Comparison of the data with those obtained by the same technique on the lime-base system indicates a generally similar behavior in the two cases. At any given pressure of sulphur dioxide, however, the equilibrium sulphur dioxide content of the solution is significantly higher in the ammonia-base than in the lime-base syseem.

6. THE SOLUBILITY OF SULPHUR DIOXIDE IN CALCIUM BISULPHITE SOLUTIONS—C. K. White, Jr., J. E. Vivian, and Roy P. Whitney

Results are presented on the solubility of sulphur dioxide in calcium bisulphite solutions in the two-phase (gas and liquid) region. Sulphur dioxide pressures up to approximately one atmosphere, combined sulphur dioxide concentrations from 0 to 2.1 grams per 100 grams of water, and temperatures of 10, 18, and 25° C. were investigated. The results were obtained using a constant-pressure flow technique, in which gas of fixed composition was bubbled through a lime slurry of known concentration until equilibrium had been established.

Examination of the results indicates that, in the two-phase region, the sulphur dioxide pressure is directly proportional to the "true free" sulphur dioxide concentration of the solution. Comparison of the results with those of previous investigators indicates excellent agreement with the relationships proposed by Beuschlein and Conrad *(Paper Trade J.* 105, no. 4: 37 (July 22, 1937)), obtained by extrapolation of their data on the three-phase region of the system.

7. A STUDY OF THE ORIGIN OF THE KRAFT COLOR—W. W. Pigman and W. R. Csellak

Earlier studies of the nature and cause of the kraft color have been extended. In the present paper, further evidence is presented which indicates that the bulk of the color is derived from lignin.

The brightness (reflectance at 457 mmu) of an unbleached kraft pulp appears to be a direct function of the lignin content. The wood species from which the pulp was derived and the cooking conditions seem to affect the color only as they affect the amount of residual lignin. The greater brightness of kraft hardwood pulps, as compared with softwood

pulps, appears to be a result of the greater extent of removal of lignin from the hardwoods, rather than of the presence of specific color-precursors in softwoods.

The amount of hypochlorite bleach required to bring a series of slash pine kraft pulps to a brightness of 65 was found to be a linear function of the lignin content of the unbleached pulps. A similar relationship for kraft pulp from jack pine seems to exist.

Pulping of spruce and aspen holocellulose by the kraft process gives a much lighter pulp than when wood chips are used and the color is very easily bleached. Addition of lignin to spruce holocellulose and to partially chlorited spruce chips before digestion produces a colored pulp which is more difficult to bleach than the same pulps produced without the addition of lignin.

A light color is produced on cotton linters by the addition of lignin to the linters before digestion with kraft liquors. A composite cook of the various known components of sprucewood produced a pulp colored to about the same degree as when lignin alone was added to the linters.

"Caramelization" of sugars and other carbohydrates appears to be of minor importance in the formation of the kraft color. Color bodies are formed under the alkaline conditions of the kraft process, but they are much more easily bleached than the typical kraft color bodies. As evidence for this conclusion, it is shown that holocellulose, the carbohydrate fraction of wood, does not yield a dark colored pulp resistant to bleaching. Also, cotton, linters, when treated with kraft liquors containing D-glucose in quantity as much as 50% of the weight of the linters, yield pulps which, although dark in color, are easily bleached.

2:00 P.M. VOCATIONAL TRAINING (Grand Ball Room)
B. E. Lauer, Chairman

1. UNIVERSITY TRAINING ON THE GRADUATE LEVEL—Harry F. Lewis

2. UNIVERSITY TRAINING ON THE UNDERGRADUATE LEVEL—E. C. Jahn

3. TRAINING IN THE VOCATIONAL SCHOOLS—George A. McGarvey

The schools and courses of high school grade and terminal in nature which are devoted to vocational education are discussed.

The National Vocational Education Act which was passed in 1917 was the first grant of aid for vocational education and while it was initially devoted to training workers during World War I, it was not until 1919 and 1920 that all the states were organized. Under the program there has been a steady growth in the preparation and upgrading of workers under public supervision and control during the intervening years.

Foreman training conferences have been conducted at several paper mills and of special interest to the paper industry was the publication of the U. S. Office of Education, "Vocational Training in the Pulp and Paper Industry." The author suggests that more attention should be given to the extension of a training program on the basic processes of the industry in the public schools as well as operating groups.

4a. AN APPROACH TO INDUSTRIAL EDUCATION —F. A. Olmsted

The modern industrial corporation has the privilege and responsibility of providing means by which employees can learn and grow. The plans followed by the Crown Zellerbach Corporation provide for voluntary self-improvement at all levels of employment. They are still in process of development, but certain fundamentals have been well established on which to build.

For those in management and executive positions, conferences and subscriptions to specialized services are used. Supervisors and foremen participate with the management groups in an annual conference and receive frequent issues of a news sheet which provides up-to-date information concerning new developments in both the corporation and the industry. Supervisors and foremen also receive the benefit of corporation membership in the Training Within Industry Foundation. This provides training in job instruction, job methods and job relations. A course in conference leadership is also offered to employees in the supervisory level.

Special instruction courses for special groups working in particular fields are made available.

Each new employee is given a booklet which supplies information concerning policies, rules, procedures and opportunities.

With this are included historical data and an outline of corporate plans for such matters as sustained timber supplies and research which make for security of employment.

Safety and First Aid instruction are provided for all employees. The Crown Willamette Paper School, subject of a previous paper by A. G. Natwick, is now in its 15th successful year.

Moving pictures are widely used to provide employees in all divisions with information concerning the industry and company operations. A liberal policy of rewarding employees for worthwhile suggestions, as well as patentable inventions, provides a real incentive for original thinking.

The benefits from the program are derived not only by those who take advantage of the opportunities offered, but by all members of the management and supervisory groups, and by the whole body of employees. Furthermore, the results in industrial relations and in public relations are worthwhile and far reaching.

4b. INDUSTRIAL TRAINING AT UNION BAG AND PAPER CORPORATION, SAVANNAH, GEORGIA—J. H. Groves

Industrial training at the Savannah plant of Union Bag and Paper Corporation consists of systematic development of the job intelligence and skill of the individual employee. The need for this development, created by the usual changes in industrial personnel, equipment, and procedures, have been accentuated by the plant's rapid expansion, the diversification of products, and the employment of numerous people with relatively little previous industrial experience.

Line supervision has the primary responsibility for the instruction of its personnel, and receives from the training department technical assistance in the comprehensive development of employee training. This development now includes systematic initial and upgrading instruction through planned job training; extension of occupational knowledge and skill through organized courses and planned meetings at the plant, courses at local educational institutions, and correspondence courses; and increased understanding and skill in personnel relations through a conference program covering this supervisory activity. The effective operation of all training requires recognition by supervisors and employees of training need and value; authentic, specifically applicable training content; carefully selected, trained instructors and conference leaders; treatment of trainees as adults; emphasis on mastery of the subject; recognition of achievement; and recording of all training performance.

Although still in its formative stages, this program already has resulted in lower training costs, reduced training time, increased supervisory and non-supervisory job understanding and skill, lower turnover, and increased production efficiency. It is true that better employee selection and placement, new equipment, improved methods, economic pressure, and other factors have contributed materially to these achievements; but it is equally true that the results of these factors would not have been realized so quickly or so completely without systematic training leading to the development of individual job satisfaction and efficiency so important to industry and its personnel.

5. WHAT INDUSTRY EXPECTS OF EDUCATIONAL INSTITUTIONS—Harold M. Annis

2:00 P.M. PULPING (East Ball Room)
John A. Hanson, Chairman

1. PULPING SOUTHERN NEW ENGLAND HARDWOODS—Robert S. Aries

2. EFFECT OF PETROLEUM BASE ADDITIVES IN

SULPHITE PULPING AND PAPERMAKING—W. A. Beman and H. E. Corbin

Increased demand for paper in recent years has lead to high tonnage requirements for sulphite pulp; better quality characteristics have also been important in spite of shortage of supply.

This need has led to modification of existing equipment, installation of new facilities and changes in operating conditions. There has been renewed interest in additives for the digestion process. In the past such additives as inert fillers, various organic compounds including wetting agents have been used. This paper is concerned with the development and application of a product of the latter type, an emulsified petroleum base processing aid. It has been used with considerable success on a mill basis in sulphite pulping including particularly the Mitscherlich process.

Decreased cook time or alternately a decrease in cook temperature for a given time cycle are indicative of an increased rate of acid penetration. Additional effects, such as improved screening, production of more uniform pulp of increased brightness, have also been noted. These are traceable to a change in the nature of the resinous materials in the wood, of which pitch is generally considered to be the most troublesome. Improved performance of the pulp treated in this manner in the papermaking conversion has been observed.

3. OBSERVATIONS ON BLEACHING GROUNDWOOD PULPS—Ralph M. Kingsbury, Earle S. Lewis, Forrest A. Simmonds

The response of groundwood pulps from a number of hardwoods and softwoods to one-stage bleaching treatments with 2% of sodium peroxide and with 10% of available chlorine as hypochlorite is reported.

The brightness of the unbleached pulps from quaking aspen, paper birch, water and black tupelo, sweetgum, yellow-poplar, sugar maple, post oak, and Eastern cottonwood range from 45 to 66. Brightness gains of 4 to 19 points were obtained with sodium peroxide and gains of 18 to 24 points with hypochlorites. The brightness of the unbleached pulps from spruce, Western hemlock, southern yellow pine, and jack pine ranged from 49 to 61. The brightness gains with sodium peroxide were 5 to 10 points and, with hypochlorites, the brightness change ranged from a loss of 1 point to a gain of 8 points.

The brightness of groundwood pulps when bleached with hypochlorites is less stable than when bleached with sodium peroxide. With respect to hue, groundwood pulps will often develop more yellowness upon bleaching with hypochlorites than with sodium peroxide. Yield of pulp after bleaching with hypochlorite was usually more than 95%.

There was no trend in the effect of bleaching on freeness. In some instances there was no change; in some, freenss was increased up to 50 ml. (Canadian Standard) and in others there were decreases up to 60 ml. The small but definite changes in bursting and tearing strengths observed upon bleaching were likely too small to be of much significance but the general trend of increase in tensile strength could be important. These increases in tensile strength ranged from 13 to 70% upon bleaching with sodium peroxide and from 40 to 130% with hypochlorites.

4. PRODUCTION OF LINER BOARDS FROM JACK PINE AND HARDWOOD SEMICHEMICAL PULPS —J. N. McGovern, G. E. Mackin, and G. H. Chidester

Experiments at the Forest Products Laboratory have indicated the possibility of producing liner boards meeting commercial specifications and use requirements from jack pine semichemical pulp and mixtures of jack pine and aspen semichemical pulp. Mill-scale board-making and fiberboard-making trials on the jack pine semichemical pulp and a 50-50 mixture of jack pine and aspen semichemical pulps and tests on the liner boards and combined boards have verified the semicommercial laboratory experiments.

In the experiments jack pine was pulped with sulphate and neutral sulphite liquors to produce pulps in yields of approximately 50 to 80% and several hardwoods, including aspen, were pulped to yields of 70 to 80%. The pulps were made into liner board on the experimental paper machine at the Forest Products Laboratory. The liner boards from the lowest yield sulphate and neutral sulphite pulps had strength properties equal or exceeding those of a sample of commercial kraft liner board. The liner board from the jack pine neutral sulphite semichemical pulp made in the highest yield (78%) was higher in bursting and tensile strength but lower in tearing strength and folding endurance than a sample of commercial kraft board. The experimental board from the 50-50 mixture of jack pine and aspen semichemical pulps (also 78% yield) was equal to the commercial kraft board in bursting and tensile strengths but was lower in tearing strength and folding endurance. The tests on the corrugated fiberboards made on a commercial scale from the jack pine and 50-50 jack pine and aspen neutral sulphite semichemical pulps indicated that boxes made from them probably would equal or have greater compressive resistance but somewhat lower impact resistance than 100% kraft boxes, but would equal or exceed jute boxes in both compression and impact. The use of aspen semichemical corrugating board to replace straw strengthened the combined fiberboards made from the jack pine and jack pine-aspen liner boards.

Commercial kraft pulp was blended with the jack pine neutral sulphite semichemical pulp in test sheet experiments. The increase in tearing strength with 25% kraft pulp present was higher than the proportion would indicate.

The experimental boards made from the jack pine sulphate semichemical pulps (68 to 73% yield) were somewhat below the commercial kraft liner sample in all strength properties.

Experimental liner boards from neutral sulphite semichemical pulp from aspen, eucalyptus, and a mixture of beech, cherry, and maple approached closely the commercial kraft board in bursting and tensile strengths, were considerably lower in tearing strength and folding endurance, and had higher stiffness values.

5. DEINKING STUDIES III. SURVEY OF A PRODUCTION SYSTEM BY SCREEN ANALYSIS—H. P. Bailey, A. H. Nadelman, and E. F. Andrews

Screen anaylsis, made with a pulp classifier and supplemented by other pulp tests, was used to survey and evaluate a deinking system. The results showed that 77% of deinking and defibering was accomplished during initial disintegration and only 21% during subsequent cooking. Practically all of the fines in the system were either present at the start of deinking or introduced with the white water or may have resulted from the delignification of coarse fiber bundles. Mechanical action did not produce any significant portions of fines. Effluents diverted to the white water system for reuse were those richest in medium and fine portions of fibers and lowest in ash content. The waste effluent had the lowest medium and fine portions of fibers and the largest ash content.

6. FACTORS INFLUENCING PROPERTIES OF MECHANICAL PULP—M. Vilars

2:00 P. M. Fibrous Agricultural Residues (West Ball Room)
S. I. Aronovsky, Chairman

1. AGRICULTURAL RESIDUE PULPS—COMPARISON OF PULPING PROCESSES—S. I. Aronovsky, A. J. Ernst, H. M. Sutcliffe, and G. H. Nelson

The economic status of cereal grain straws as a source of pulp for the manufacture of fine paper specialties has improved because of the great progress made recently in increased mechanization and efficiency in collecting and baling these straws. A series of cooks was made on wheat straw by the soda, kraft, neutral sulphite, ammonia, magnesium acid sulphite and ammonium acid sulphite processes, under uniform pulping conditions. The pulps were screened, analyzed chemically, and tested for physical strength properties by the standard methods. The data are given in ten tables and illustrated in two graphs.

In considering the alkaline processes it is shown that each of these processes possesses some advantage over the others in the production of pulp from wheat straw. The largest pulp yields were produced by the neutral sulphite process and

the smallest by the soda process, with the kraft pulp yields somewhat larger than those produced by soda pulping. However, the strength characteristics were in the reverse order, with the soda pulps being the strongest, followed by the kraft and then the neutral sulphite pulps. Pulping with ammonia was considered to be impractical because of the large amounts of reagent required.

The acid pulping processes produced relatively weak and brittle pulps from straw. It was apparent that these processes are unsuitable for producing strong and satisfactory pulps from agricultural residues of high silica content.

The bleached agricultural residue pulps had better strength properties, with the exception of tensile strength, than the unbleached pulps, and the largest increase in strength on bleaching was evidenced by the neutral sulphite pulps.

2. AGRICULTURAL RESIDUE PULPS—HIGH-YIELD STRAW PULPS FOR FINE PAPERS—S. I. Aronovsky, G. H. Nelson, A. J. Ernst, H. M. Sutcliffe and E. C. Lathrop

The pulp and paper industry of this country is becoming increasingly interested in the possibilities of using agricultural resdue pulps for fine papers. The lower cellulose contents of the agricultural residues and the consequently lower yields of papermaking fiber generally produced from these residues have often put these materials at an economic disadvantage when compared with wood. A process giving high yields of relatively strong, easy bleaching pulps from agricultural residues should partly overcome this disadvantage.

Whereas the Cross and Bevan and alpha-cellulose contents of agricultural residues such as the cereal grain straws are smaller than those of the common pulp woods, the holocellulose or total carbohydrate contents of these two types of raw materials are approximately the same; the agricultural residues have considerably larger hemicellulose contents. Attempts to produce holocellulose for industrial purposes, by the use of sodium chlorite in various forms, by-treatment with chlorine gas and other chlorine compounds in organic solvents, or by combination of these procedures were unsuccessful from the standpoint of practicality and cost. A previous report from the Northern Regional Research Laboratory indicated that pulping with neutral sodium sulphite produced relatively high yields of easy bleaching pulps from wheat straw. The present paper gives a more detailed study of this process.

The data, given in several tables and graphs, show that yields of 52 to 55% of screened pulp were obtained by cooking sound wheat straw with 8% sodium sulphite and 2 to 3% sodium carbonate on the basis of dry straw, for 2 hours at 170° C. (100 p.s.i.), using a total liquid to straw ratio of 7:1. This unbleached pulp had a maximum bursting strength of 85 to 95 points, a tensile strength at maximum burst of about 170 grams per ream pound, and a freeness (Schopper-Riegler) of 400 to 500 ml. The relatively low tear resistance of 40 to 60 grams per ream pound is due to the shortness of the wheat straw fiber. This tear resistance was, however, somewhat greater than that found for hardwood soda pulp.

Bleaching these neutral sulphite straw pulps to a brightness of 70 and above (Hunter reflectometer) reduced the yields to approximately 49 to 53 of the original weight of dry straw. Bleaching also enhanced the strength properties of the pulps, particularly the bursting strength and folding endurance. The tear resistance of the bleached pulps was approximately the same as that of the unbleached material. The tensile strength of the pulps was decreased somewhat on bleaching. The bleached pulps hydrated more readily, as indicated by the reduced beating periods required to reach maximum Mullen, than the unbleached pulps. About 5 to 7% total chlorine was required to bleach the pulps to a brightness of 70 or above. Three-stage bleaching resulted in slightly lower yields of pulps than were obtained with single-stage bleaching; however, the pulps bleached by the multi-stage process consumed less total chlorine and had somewhat higher strength characteristics, particularly folding endurance.

An analysis of the data indicates, on the basis of the pulp yields, bleach requirements, and strength characteristics, that 6 to 8% sodium sulphite plus 2 to 4 % sodium carbonate give the optimum results under the condition employed in these studies.

With straw at $14 per ton, sodium sulphite at $53 per ton, soda ash at $36 per ton, chlorine at $41 per ton, and lime at $10 per ton, the total raw material cost for producing 1 ton of bleached pulp with a brightness of 70+ was $41.44. This figure, based on a 50% yield of bleached pulp, includes $28 for straw, $8.44 for pulping chemicals, and $5 for bleaching chemicals.

This bleached neutral sulphite straw pulp should be completely satisfactory for blending with wood and other paper pulps in the production of fine specialty papers such as writing, book, magazine, and litho, as well as in art papers and bristol boards. The inclusion of the straw pulp in the furnish should result in lower beating and refining costs and in producing papers with better formation and improved strength and printing characteristics.

3. FURTHER PROGRESS IN CONTINUOUS PULPING—R. G. Goodwin

The present work was undertaken in order to compare the straw pulps as made by three distinctly different methods. The pulps were required to be suitable for 9-point corrugating. The straw cooking methods compared are: 1. Rotary digester—low pressure, 2. Defibrator-Chemipulper—high pressure, and 3. Morley continuous pulper—atmospheric pressure.

Test data and straw pulps made in a rotary by standard procedures as used in one of our straw mills were supplied for these comparative tests.

The Defibrator-Chemipulper equipment was operated at 120 to 160 pound steam pressures using caustic soda as the digestive agent.

The straw pulps made by the Morley Continuous Pulper were obtained from the Thames Mills, England. The pulps prepared in this manner consumed 9 to 10% caustic soda on the air-dry straw using an atmospheric pressure cooking cycle of 18 to 20 minutes.

The test data obtained on these straw pulps indicate that the Morley continuous pulper makes a better grade for 9-point corrugating and the rotary and Defibrator-Chemipulper methods make pulps of approximately equal quality.

Wednesday, February 25, 1948

9:15 A.M. Structural Fibrous Materials (Room B-C)
John F. Campbell, Chairman

1. A COMPARISON OF SEVERAL FREENESS TESTERS ON BOARD STOCK—C. E. Hrubesky

In cooperation with the Raw Materials Testing Subcommittee of TAPPI Structural Fibrous Materials Committee, a comparison of five freeness testers was made on structural board stocks. Using a (1) Schopper-Riegler (regular), (2) Schopper-Riegler (modified), (3) Canadian Standard, (4) Oliver, and (5) Fir-Tex tester, values were obtained on a free, normal, and slow stock from each of seven board manufacturers.

With the Fir-Tex tester, tests were made at 60° F. and at 108° F. to determine the weight of each stock required to reduce the flow of water from 0.75 to 0.10 gallon per minute when pulled through the pulp pad by a 20-foot water leg.

With the other testers, values were obtained wtih each of the stocks at 60, 80, and 100° F. using test specimens equivalent to 0.13, 0.5, 1.0, 1.5, and 2.0 grams oven-dry stock per square inch of screen area.

The results shown in tables and curves indicate that no exact correlation exists between the freeness values obtained by the different instruments used.

The Schopper-Riegler (regular) and Canadian Standard testers are in close agreement for most stocks but show wide variations with other stocks. The differences shown between free, normal, and slow stocks are not so great with these testers as with the Schopper-Riegler (modified) and the Fir-Tex testers.

The Oliver tester indicates wide differences in the freeness values of some free, normal, and slow stocks but only slight differences in these values for other stocks.

No attempt was made to correlate freeness of a stock with

its running properties on a machine. With any individual furnish on a single machine, a close relationship should exist between freeness determined by any method and the running properties. With different furnishes on one or different machines, it is believed that a value based on drainage time or weight of pulp required for constant change in drainage rate might give a closer correlation than values based on the divided-funnel type instruments.

2. PRESERVATION OF FIBER INSULATING BOARD WITH CHLORINATED PHENOLS—E. A. Behr

In test plots maintained by the Chapman Chemical Company and The Dow Chemical Company at Bogalusa, Louisiana and Jacksonville, Florida, various preservative treatments are tested for their efficiency in preventing attack of fiberboards by termites and decay. Fiberboard samples were installed in both above ground and partially buried locations, with the former being considered as resembling service use more closely.

Most of the test plot data were on specimens treated with chlorinated phenols. The pulp was prepared in the usual way on commercial equipment and the sodium salt of the chlorinated phenol added to the pulp slurry with the rosin size. In some samples alum was the only precipitant used and in other sets of specimens copper sulphate was added before the alum which resulted in the toxic being precipitated as the copper salt instead of the free phenol as in the case of alum precipitation. About 10 to 15% of the chlorinated phenol is lost in the drainage water.

In comparison with arsenous oxide sodium pentachlorophenate precipitated with alum gives about equal protection. Where spray applications of either arsenical or chlorinated phenol are used, however, the protection is not nearly so lasting.

Both decay and termites are active in the Bogalusa test plot; untreated fiberboard made from aspen groundwood lasts about 15 months in partial below ground exposure. The same type of fiberboard treated with asphalt emulsion, but no toxic lasted about 40 months in the same location. Those specimens of board treated to a retention of 0.95% of the dry weight of the board with pentachlorophenol were not destroyed in 76 months.

Board prepared from aspen groundwood, southern pine groundwood, waste paper, western softwoods semi-chemical, sugar cane waste, and a British pulp all were preserved about equally by a given concentration of chlorinated phenol. None of the untreated boards showed any particular resistance to decay fungi or termites. Pentachlorophenol treated board, using 0.8% based on the dry weight of the board can be expected to last five to ten times as long as untreated board in severe exposures. Equivalent protection can be obtained with half as much copper pentachlorophenate.

3. TEST APPARATUS AND PROCEDURE FOR DETERMINING RESISTANCE TO IMPACT AND CONCENTRATED LOADS OF STRUCTURAL INSULATING BOARD—M H. LaJoy and F. B. Rowley

A research program concerning essential properties of insulating boards together with methods and types of test apparatus for rating these properties is being conducted in the Engineering Experiment Station, University of Minnesota, in cooperation with the Minnesota and Ontario Paper Company. The results of this study concerning two of the properties, impact strength and concentrated load strength, are discussed in this paper.

Impact strength may be defined as the resistance of insulating board to shock or impact loads on those areas where there is no rigid backing under the area of impact.

Several methods now in use for determining the impact strength of other types of materials are discussed in the paper, but as pointed out, none of these were designed for material such as structural insulating board. The method recommended consists of firmly supporting the sample around its edges in a horizontal position and dropping a given weight having a definite shape of contact point through a specified distance, and noting the number of drops necessary to produce failure in the material.

Among the variables considered in developing the method and test apparatus were, first, the shape and area of the indenter; second, the weight of hammer and distance through which it should be dropped; third, the size of sample and method of supporting it in the test apparatus; and fourth, the various methods of rating the test results. Experimental data are given concerning the various parts of the investigation, and also the rating of several different types of structural insulating board, and sheathing by this method. The design of the machine and the method of supporting the specimen and test procedure are given in the paper in detail.

Concentrated load strength may be defined as the resistance to pressure on a small surface area under which there is no rigid backing.

The difference between the impact load and the concentrated load test is primarily in the method by which the load is applied, even though the properties of the materials under these two tests are different. The variables considered were first, the size of test specimen and method of supporting it together with the relation of the test point to the position of support; second, the size and shape of indenter; and third, the rate at which the load is applied.

Investigation showed that the method of supporting the test specimen and the size of the specimen was not as important for the concentrated load test as was the case for the impact strength test. The same method of support was used as that developed for the former test. Likewise, the same semi-spherical indenter was used.

The details of a suggested apparatus together with test procedure for concentrated load is given in the paper, and also the relative rating of several different structural insulating and sheathing boards are shown.

The authors wish to make it clear that the design of the test apparatus and test procedures both are the result of a laboratory research investigation, and that they are open-minded for suggestions, changes or improvements which may be developed by the use of these test procedures in the field.

4. EVALUATION OF FIBROUS AGRICULTURAL RESIDUES FOR STRUCTURAL BUILDING BOARD PRODUCTS—I. METHODS AND EQUIPMENT OF THE NORTHERN REGIONAL RESEARCH LABORATORY—E. C. Lathrop and T. R. Naffziger

The equipment and methods used at the Northern Regional Research Laboratory for evaluating fibers for structural board manufacture are described. A Schopper-Riegler freeness tester, with a modified orifice of 0.156-inch diameter and using pulp at 0.4% consistency, gives duplicable results on free and slow pulps and has a practical range. Comparison of physical properties between laboratory boards and commercial boards or 3 by 3 foot experimental boards made from the same pulps, respectively, is shown to be quite close. With sufficient study it is possible to develop a factor between the strength values of small boards and a commercial board machine so that a close production of commercial operation may be arrived at in the laboratory. Data are presented showing the relationship between the moisture content of the board entering the drier and physical properties of the board. Density and strength factors increase with decreasing moisture content. By blending increasing proportions of hydrated pulp, the strength of the board at the same moisture content may be increased. The impact strength of commercial wood pulp insulating boards is low in comparison with boards made from bagasse or wheat straw. This is shown to be due to the long tough fibers which may be produced from residues. It is suggested that wood fiber boards could be increased in impact strength by the incorporation of properly refined wheat straw or bagasse long fibers. This is the first of a series of papers relating to the fundamental fiber properties of agricultural residues as related to structural board manufacture.

5. EVALUATION OF FIBROUS AGRICULTURAL RESIDUES FOR STRUCTURAL BUILDING BOARDS II. FUNDAMENTAL STUDIES ON WHEAT STRAW FIBER—E. C. Lathrop and T. R. NAFFZIGER

6. USES AND ABUSES OF FIBERBOARD IN MODERN CONSTRUCTION—Griffith S. Clark

With the increase in the usage of fiberboard for construction purposes it becomes the responsibility of the manufac-

turer to provide the customer with adequate information so that the product is used to its greatest advantage.

The right type of material should be sold for each particular application and instructions should be given as to the method of use. The user should be cautioned to use adequate stud spacing, to compensate for expansion caused by moisture, to apply a proper plaster base if the board is to be plastered, and to use proper nailing techniques. Suggestions are given.

7. AN ACCELERATED METHOD FOR MEASURING THE PENETRATION OF WATER IN INSULATION BOARD—Willmer A. Wink and J. A. Van den Akker

The present work is an outgrowth of a previously reported investigation of the penetration of *liquid water* in insulation board. It had been shown that a moderate elevation of the temperature appreciably increased the penetration rate; this has been taken as the basis for an accelerated method. The laboratory manipulations have been simplified, and improved means for determining the degree of penetration of water have been developed. Penetration data for samples of insulation board supplied by eleven manufacturers were obtained at 100, 120, and 130°F. In every case it was found that the new method for measuring the degree of penetration agreed with data on the distribution of water in the board. A large accelerating factor was found at 130°F., and the relative ranking of samples with regard to resistance to penetration of water at that temperature was observed to be substantially the same as that existing at 100 and 120°F.; in the case of the five samples having the least resistance to penetrations the ranking was the same as these three temperatures. An accelerated mill control test is proposed.

9:15 A.M. COATING (East Ball Room)
Frank J. Egan, Chairman

1. A STUDY OF PENETRATION OF STARCH ADHESIVE IN A COATING MIXTURE INTO BASE PAPER—J. P. Casey

Two subjects are discussed—first, the factors which affect the penetration of the adhesive in a coating mixture into base paper: second, the relationship between the depth of penetration of the adhesive into base paper and the properties of the final coated sheet.

The results indicate that the depth of penetration of the starch adhesive into the base paper is decreased by; increased sheet density, increased sizing, decreased sheet moisture content, and to a lesser extent by the presence of ilumina in the sheet.

There appears to be a straight line relationship between the depth of penetration of the adhesive in microns and the ink rceptivity of the coating. However, there is no definite relationship between the depth of penetration and the wax number of the coating since this property seems to be more affected by the strength of the base paper than by the depth of penetration of the adhesive. Increasing the depth of penetration of the adhesive tends to decrease the smoothness of the uncalendered coating.

In general, the wax number of the coating tends to increase with increased density of the base paper and decrease if either rosin or clay are added to the base paper.

The ink receptivity of the coating decreases with increased density when the base paper is unsized, but is not appreciably affected when the base paper is sized. The ink receptivity decreases as the amount of size in the sheet is increased.

The smoothness of uncalendered coatings is increased by increased beating of the stock used in making the base paper up to a certain point after which it is decreased. The smoothness is also increased by increased sizing.

2. THE RHEOLOGICAL PROPERTIES OF CLAY-WATER SUSPENSIONS—Bernard K. Asdell

Coating clays are assumed to consist primarily of the mineral kaolinite. Dispersion and flocculating characteristics are discussed in terms of the diffuse double layer absorbed on particles of this mineral.

Clay particles are thin hexagonal plates. When attractive forces predominate between thm, as in flocculated systems, a reversible sol-gel structure develops which accounts for thixotropic characteristics and yield values. Fine particles derived from the same crude are more thixotropic than the coarser ones. When repulsive forces predominate, as in dispersed systems, thixotropy either does not exist, or it is at a minimum depending somewhat on the concentration. The viscosity increases slightly with decreasing particle size.

As the volume per cent of a completely dispersed clay is increased, a critical point is reached where the apparent viscosity rises very rapidly. This is due to dilatancy developing as a result of crowding the particles. The critical point occurs at a lower volume per cent for a clay having a large proportion of coarse particles.

Extremely dilatant systems cannot be handled in equipment having very close clearances. This is the limiting factor in the per cent solids which can be obtained with a given clay. The better grades of coating clays can be handled easily in the deflocculated state with heavy duty pumps and mixers in the range of 70 to 72% solids by weight (49 to 50 volume %).

3. THE HERCULES HIGH-SHEAR VISCOMETER—J. Wilson Smith and Paul D. Applegate

High-solids pigment suspensions are frequently applied industrially under conditions which subject them to high rates of shear. Since these suspensions, in general, possess complex flow characteristics, prediction of their performance under such conditions from conventional viscosity measurements is difficult.

To assist in the accumulation of data useful in analyzing the rheology of complex materials under conditions of high shear, an inexpensive, precision viscometer has been devised. The construction of this viscomieter, together with the rheological properties likely to occur in complex fluid systems and some of the mathematical treatments involved in their analysis is discussed.

4. THE ELECTRONIC GLOSS INDICATOR AS AN AID IN THE CONTROL OF PAPER FINISH—Kenneth Bowers

The control of paper finish has long been a problem of the paper industry. This discussion deals with the method of controlling pressure and moisture conditions at the supercalender stack and pressure conditions on the friction calender stack, and describes an electronic gloss indicator that continuously indicates gloss variations of the moving paper web.

The paper describes an electronic gloss indicator instrument of high sensitivity which consists of a photo electric scanner, electronic amplifier, and indicating meter suitably marked for gloss indication. The instrument is not affected by color of the paper, voltage changes in the mill power supply circuits, or by other conditions prevailing in the average paper mill. By the use of a remote scanning unit it can be conveniently mounted on the calender stack with the amplifier located out of the way and with the indicating unit placed in a convenient position in the front of the calender stack near the pressure and moisture controls so that the operator can efficiently use the instrument in the calendering operations.

Electronic gloss indicator equipment has been installed on supercalenders and friction calenders in several mills in the United States and has given satisfactory service under severe operating conditions. The instrument is used by the calender operator as a means of setting his pressure and moisture controls so as to maintain a uniform gloss finish throughout each roll. In this way it is possible to hold the gloss desired from roll to roll. The operation of the instrument is simple to use and practically foolproof.

9:15 A.M. WATER (Grand Ball Room)
Lewis B. Miller, Chairman

1. BIOLOGICAL TREATMENT OF DEINKING WASTE—Philip F. Morgan

The paper industries' deinking waste presents a serious pollution problem in many streams into which it is discharged because of the large amount of suspended solids carried in the waste and because of the high Biochemical Oxy-

gen Demand (B.O.D.) of the liquid fraction of the waste. Because the greatest proportion of the B.O.D. is in solution, conventional sedimentation or chemical coagulation and sedimentation treatment methods have not proved adequate.

A method of biologically treating this waste was worked out in the laboratory which is sponsored by the National Council for Stream Improvement at Kalamazoo, Michigan. The paper summarizes the procedure used in the development work and presents typical data showing results obtained. All reported work was carried on in 1-gallon tanks so pilot plant work will be necessary before cost-of-treating figures can be obtained and before methods of disposal or utilization of the by product sludges can be worked out.

The work shows that relatively high B.O.D. reductions can be obtained under laboratory conditions and indicates that this method of treatment may be applicable for the deinking waste so the treated waste can be discharged to rivers or streams without creating a public nuisance.

2. THE EFFECT CHEMICAL AGENTS ON IRON BACTERIA—Karman Duchon and Lewis B. Miller.

A systematic survey of the technical literature upon iron bacteria preceded these researches. This survey indicated that the growth of iron bacteria is frequently a troublesome problem in both municipal and industrial water systems. In municipal water systems growth of the bacteria on the wall of pipes frequently greatly reduce the capacities of the pipes. Unpleasant tastes and odor are imparted to the water. Brown or reddish coloration of the water is noted due to the presence of iron hydroxides resulting from bacterial action on the water which interferes in its domestic usage, as by staining and discoloring laundry. In industrial systems requiring high quality water (such as in the manufacture of high grade pulp and paper, textiles, synthetic fibers, etc.) iron bacteria may lead to discoloration, spotting, and staining of the manufactured products involving a total loss or decrease in value of the finished products.

In order to study the effects of chemical substances a laboratory method for growing iron bacteria under partially controlled conditions was developed. In addition a semiquantitative method was developed for determining the extent of increase in size and number of the bacteria. Within the limits imposed by those methods of laboratory study, investigations were made to determine the effects of pure chemical substances:

a. In accelerating the growth of iron bacteria, particularly *Crenothrix polyspora*, which is probably the most important species of iron bacteria from the standpoint of its effect upon water systems;

b. In controlling or destroying these bacterial growths.

It was found that small amounts of ferrous salts, sugars, a low pH, and compounds having a reducing action accelerated the growth of iron bacteria in a distilled water medium.

Many types of compounds were tested for their bactericidal effects upon iron bacteria. Some of these have been previously tried and found to be successful in controlling the growth of iron bacteria or other bacteria, particularly those of a pathogenic nature. Some have not been tried previously. Very few compounds were found to be even partially effective in controlling the growth of *Crenothrix*. Of these chlorine or hypochlorites yielded the best results.

3. FEDERAL LEGISLATION ON WATER POLLUTION CONTROL—Arthur D. Weston

The question: "Are we to have Federal Water Pollution Control? — appears to be in the process of being answered by the 80th Congress which has under consideration two important bills (S. 418 and H. R. 3990) which provide for water-pollution-control activities to be set up in the Federal Security Agency (Public Health Service) and the Federal Works Agency. S. 418 would grant only loans for the construction of remedial works and plans relating thereto, but H. R. 3990 would make available grants-in-aid and loans. Loans under S. 418 and grants-in-aid under H. R. 3990 would be limited to 33-1/3 per cent of the reasonable cost of the project. Both bills would provide for the Attorney General to bring suit on behalf of the United States to secure abatement of pollution and, unlike S. 418, H. R. 3990 would prevent any "new outlet" for discharge of polluting matters into interstate waters except as might be approved by the Surgeon General.

Action taken by the Conference of State Sanitary Engineers and the Association of State and Territorial Health Officers would indicate that the enforcement agencies in general prefer a Federal act calling for Federal assistance in investigation and study rather than Federal police power in the beginning, but an examination into the adequacy of State laws relating to water pollution control shows that no such laws are available in seven States, while in some States these laws are not sufficiently adequate.

Many interstate agencies have been set up to further water pollution control but, except under the Interstate Sanitation Commission (so-called "Tri-State Compact between New York, New Jersey and Connecticut) and the New England Interstate Water Pollution Control Commission, interstate water pollution agencies up to the present have little power in water pollution control.

Under the "Tri-State" and the New England Interstate Water Pollution Control Commission rapid progress is being made in preventing pollution of streams and tidal waters and it is hard to believe that Federal control in these areas will expedite the remedial programs. However, it obviously would be unfair for one State to clean up its waters only to be subject to pollution from another State or to be called upon to clean up its waters when a State lower down on a stream or tidal water permits uncontrolled pollution. Such practices would permit of unfair competition in industry and must inevitably result in Federal water pollution control.

4. PHYSIOLOGICAL EFFECTS OF SULPHATE PULP MILL WASTES ON SHELLFISH—Walter A. Chipman, Jr.

The effluents of sulphate pulp mills contain substances that are toxic to aquatic life. If present in sufficiently strong concentration, immediate and sudden death may result. Toxicity, however, may follow long continued exposure to weaker concentrations and may be evidenced in physiological changes within the organism which interfere with its well being. Continued exposure to a harmful environment will be experienced particularly by those forms that are sedentary and unable to avoid such situations.

Experiments testing the physiological action of sulphate mill wastes were carried out in connection with a study of pollution by materials in the York River, Virginia, where an environment existed that caused a severe decline in the oyster production. This was the result of the poor quality of the oysters which made them unfit for marketing. Tests were made of the action of mill effluents on the hours that oysters remained open for feeding and respiration and on the delicate mechanisms concerned with the rate of pumping of water for these purposes. Further experiments were designed to test the physiological effects of the mill effluents after various treatments and fractionations in attempts to isolate the physiologically active material and thus indicate possible means of eliminating these injurious effluents from our natural waters.

Results of the physiological experiments showed that the pulp mill waste reduced the number of hours that oysters were open. In addition there was a decrease in the amount of water pumped by the oysters while open. This reduction was shown to result from an interference with the mechanism of ciliary activity of the gill epithelium.

The toxity of the sulphate mill waste, evidenced by these physiological changes, could be reduced by oxidation, which may give some clue to possible methods of rendering it harmless before discharge into a stream. The toxic material seems to be concentrated in the soap portion of the mill products. The exact nature of the toxic material was not determined.

5. SLUDGE CONTACT REACTORS IN WHITE AND WASTE WATER TREATMENT—V. J. Calise

Pulp and paper mills are becoming increasingly interested in white and waste water treatment by means of sludge-contact reactors in order to: (a) recover and reuse the clarified water, (b) recover and reuse the concentrated fiber and

stock, (c) avoid polluting streams and public water supplies, and (d) simplify plant flow sheets and designs.

In the sludge-contact reactor, the suspended solids recovered from the white or waste water are maintained as a deep dense bed of sludge through which the incoming, chemically treated, white or waste water is passed.

The suspended sludge has the remarkable property of catching and separating the solids in the incoming white water, producing an effluent of great clarity.

It is shown that the results obtained with the sludge contact white water reactor are far superior to those of conventional clarifying units.

In the sludge contact reactor, concentrated, suspended solids are drawn off from an external concentrator or an integral concentrator at a rate equal to the incoming rate in order to provide a uniform depth of sludge in the reactor.

Chemicals are automatically and continuously fed to provide optimum coagulation conditions.

The use of an external concentrator assures the maximum concentration of fiber or solids content as well as the highest degree of clarity of treated water from the reactor. Recovery of fiber and solids as high as 97% is accomplished by means of this arrangement with maximum ease of operation.

Operating flow sheet and design data are given for a large white water sludge contact reactor installation.

6. THE APPLICATION OF THE CYCLATOR IN PAPER MILL WHITE WATER TREATMENT — J. M. Kahn.

9:15 A.M. Wet Strength (West Ball Room)
K. M. Britt, Chairman

1. WET-STRENGTH DEVELOPMENT WITH NEUTRAL, WATER-SOLUBLE POLYMERS— Robert J. Meyers and Louis E. Kelley.

It is generally recognized that a wet-strength resin should meet the following requirements: It should develop a high degree of wet strength per unit weight of resin employed; the wet strength quality should be more-or-less permanent; no undesirable characteristics should be imparted to the paper; the method of application should be simple. Other requirements (ease of broke recovery, wet-rub resistance, fold-endurance, etc.) may be added in special cases. It is probable that no single resin will meet all the requirements.

A study was made of the relative wet-strengths developed by four different synthetic resin polymers in paper, when added by impregnation. One resin was found to develop very high wet and dry tensile strengths under neutral conditions, no added catalyst and at normal dryer temperatures. The wet-strength so developed was found to be resistant to acid hydrolysis, and retained in large measure over long periods of immersion in water; the wet-strength was easily destroyed by treatment of the paper under mildly alkaline conditions.

An interpretation of the results is attempted on the basis of the chemical and physical characteristics of the resins examined. Preliminary experiments on use of the resins as wet-end additives are reported.

While the initial interest in the neutral, water-soluble polymer residues in the wet-strength characteristic, other properties of the resin suggest additional applications in the paper field. The high degree of tack and adhesion to rough surfaces, the resistance of the film to oils, and the action of bacteria and fungi, the emulsifying, thickening, and general protective colloid character of the resin appear to offer promise in paper coatings and other paper converting operations. Other uses as a modifier for starches, polyvinyl alcohol, glue, casein, and sodium silicate are indicated.

2. THE CHEMISTRY OF UREA AND MELAMINE RESINS— Robert W. Auten.

The chemistry of the industrially important, thermosetting urea-formaldehyde and melamine-formaldehyde resins involves three successive reaction stages: (A) formation of crystalline methylol derivatives; (B) condensation to soluble or dispersible resins composed of linear, branched, or cyclic molecules; and (C) cross-linking to hard, insoluble, infusible products characterized by two- and three-dimensional molecular networks.

Under neutral conditions urea reacts with one or two moles of formaldehyde to form monomethylol urea or dimethylol urea, respectively. Prominent among the several mechanisms which have been proposed for the "B" stage resinification are: intermolecular condensation to form linear or branched polymeric molecules (Walter); intramolecular loss of water followed by polymerization along C=N double bonds; and the Marvel-Thurston theory of cyclic trimer formation, according to which urea is assumed to behave as an amino-acid amide.

Unmodified "B" stage urea-formaldehyde resins have been extensively used in molding powders, as plywood adhesives, and for water-proofing starch. Certain chemical modifications have extended the range of usefulness. Co-reaction with sodium bisulphite has been used to introduce methylene-sulphonate groups which enable highly condensed hydrophils to be prepared which are eminently suitable for use as beater additives in the production of wet-strength paper. Another example of chemical modification is co-reaction with an alcohol to produce alkoxy-substituted urea-formaldehyde resins which are soluble in organic solvents and useful as surface coatings.

Melamine is a thermostable, chemically resistant, hexafunctional heterocyclic compound which can be prepared from calcium cyanamide through dicyandiamide as intermediate. "A" stage compounds are known with as many as six methylol groups per molecule. The "B" stage products are roughly analogous to those from urea and have been widely used for similar purposes. Of special interest has been the production of wet-strength paper by the Wohnsiedler process, which involves adding directly to the pulp a cationic, hydrophil colloid prepared by aging a low-condensed melamine-formaldehyde condensate in dilute solution and in the presence of nearly equivalent proportions of strong acid. The principle of introducing alkoxy groups by alcoholic co-reaction has been extended to the melamine-formaldehyde polycondensation in the preparation of high quality coating resins.

3. FUNDAMENTAL PHYSICAL—CHEMICAL CHARACTERISTICS OF MELAMINE RESIN ACID COLLOID—J. K. Dixon, G. L. M. Christopher, and D. J. Salley

Melamine-formaldehyde acid colloid has been studied by a number of physical-chemical methods. The monomer of trimethylolmelamine in solution behaves as a weak base and forms a completely dissociated salt with an acid. The viscosity of the acid solution of the monomer increases with time, suggesting that polymerization is occurring, and the accompanying decrease in pH indicates that the polymer is a weaker base than the monomer. Anions are bound to the polymer, and the extent of binding as a function of the age and concentration of the solution has been examined by conductivity, self-diffusion, and electrical transport methods, the latter two involving radioactive tracer techniques. The strength of binding depends on the kind of anion present, sulphate being more strongly attached than chloride. The polymer in solution has a net free positive charge which decreases with age. On the other hand, cataphoretic and streaming potential measurements indicate that the polymer-pulp adsorption complex has a positive charge which increases with age of the polymer. Combined diffusion and viscosity studies have indicated that the polymer is a cigar-shaped molecule of relatively small size, containing only 10 to 20 monomer units at the most. Electron micrographs tend to confirm this but suggest that the polymer may be somewhat larger. The general picture obtained is that during polymerization the monomer units are joined together by splitting out water and formaldehyde, and that they stack up on one another like a pile of doughnuts to form a long cylinder. The bringing together of charged monomer units to form the polymer would result in the development of a high electrostatic charge density. In order to relieve this inherently unstable electrical condition protons are expelled from the polymer and anions are bound. There remains a small net free positive charge on the polymer, which varies with age, concentration, etc. The relationships of the above physical-chemical data to the wet strength produced in paper is discussed.

4. THE EFFECT OF SALTS ON THE MELAMINE RESIN WET STRENGTH PAPER PROCESS— C. S. Maxwell and W. F. Reynolds

Laboratory studies of the melamine resin acid colloid process for imparting wet strength have established that the presence of anions in the stock has a direct bearing on the effectiveness of the resin, while the presence of cations has no significant effect. Small amounts of anions are necessary for optimum results; larger amounts may have adverse affects. The potency of the anions is largely dependent on valency; divalent ions having about 10 times the effect of monovalent, and trivalent several times that of the divalent. As the divalent sulphate ion (from alum) is wide-spread in papermaking systems, the effect of this ion was studied in some detailed both on the pulp-resin system and on resin solutions alone. It is pointed out that resin, freshly precipitated by sulphates, is still capable of imparting wet strength, but if the precipitated resin is allowed to age five minutes or longer, it no longer is efficient. It is possible for a situation analogus to this to exist in a white water system using full recirculation. Based on these studies, a set of ideal conditions for mill application have been formulated as follows:

1. Refine the stock fully in the beaters before addition of resin to the thick stock.
2. Add the resin to the stock which has a sulphate concentration of about 75 ppm. This, in effect, means before the addition of any major quantity of alum.
3. Allow the resin treated stock to stand 30 minutes, or more, before addition of alum (sulphates) or dilution with fresh or white water.
4. Do not jordan or otherwise refine the resin treated stock.

Although most mills cannot completely fullfill all of these conditions several compromises are suggested that should make it possible to obtain good wet strength efficiency in almost all cases.

2:00 P.M. Statistics (Room B-C)
T. A. Pascoe, Chairman

1. THE INSPECTION SPECIFICATION AS A QUALITY CONTRACT—J. G. Strieby

The concepts and methods which have grown out of the applications of statistical methodology to quality system problems provide economic and objective means for observing and describing quality. One of the most useful devices thus made possible is the inspection specification, a quality agreement or contract which states in unambiguous manner the amount and kind of evidence accepted as demonstrating that a lot of goods does or does not conform to the agreement. Its approach is realistically factual and its statements are operationally verifiable in terms of sampling systems which provide for both consumer and producer the degree and type of protection compatible with economic considerations. Buying and selling under the terms of Inspection Specifications is on an harmoniously enlightened basis not otherwise possible.

This article discusses the philosophies and concepts of Inspection specifications and the devices by which they attain their objectives. The essential parts of the specification are listed and commented upon. To illustrate the discussion, an hypothetical specification is submitted together with operating characteristic curves and a description of steps in preparing and evaluating a specification.

For those who wish to pursue the subject further, a list of 31 references is appended.

2. APPLICATION OF STATISTICAL METHODS TO PAPER TESTING PROCEDURES PART I. FOLDING ENDURANCE—L. K. Reitz and F. J. Sillay

Three series of folding endurance experiments were run, first of which was a comparison of the precision of a Schopper and an MIT machine on the same papers. It was found that a large number of folding endurance results on a single sample formed a frequency distribution which approximated the normal or Gaussian distribution. The short method of calculating frequency diagrams was illustrated. Coefficients of variation for MIT and Schopper results on the same paper were compared, and it was concluded that there was very little difference in precision between the two types of machines.

The second series of experiments consisted of checking the reproducibility of one MIT machine on three different papers. Several samples, each of which represented a different making, were run in both machine and across machine directions. The was found to be a real difference in precision among the three grades but not between the paper directions on the same grade. Reproducibility as measured at the three standard deviations assurance level was found to be very poor, particularly when only a small number of tests were made on a sample.

The final series of experiments was run to compare folding endurance levels on four MIT machines using both 0.01 inch and 0.02 inch jaws. Using the variance analysis technique, it was found that the 0.01 inch jaw on one machine was producing high results. This jaw was replaced and part of the experiment repeated. The new results were now down to the level of those on other machines, and it was concluded that there was no more variability among machines or between jaws than would be expected as a result of test method variability.

3. STATISTICAL STUDY OF THE VARIABLES OF ALPHA CELLULOSE METHODS — A. S. O'Brien, R. C. Bloom and L. K. Reitz

A statistical study was made of several of the important variables of alpha-cellulose methods. The experiments were set up in a systematic manner so that an analysis of variance could be applied to the data obtained. During preliminary work which was aimed at eliminating all variables except those actually being studied, several other important factors were brought to light. Then by means of two different series of analyses of variance six variables were studied on a total of five pulps. The pulps were selected so as to cover a wide range in alpha-cellulose content. The lowest pulp contained approximately 85% alpha-cellulose and the highest was a chemical cotton containing approximately 99% alpha-cellulose.

Two variables studied proved to be absolutely without significance. The first of these is the rinsing with acetic acid, which is supposed to remove the last trace of sodium hydroxide. This term and all inter-actions containing this term turned out nonsignificant. In addition, the manner in which sodium hydroxide is added to the pulp, i. e. whether in portions or all at once, turned out to be nonsignificant for all pulps studied. These statements on significance are based upon the 5% level of "F".

The moisture content of pulp and its determination proved to be a very important variable. For most of the experiments of this article, the moisture analysis was eliminated altogether by making alpha-cellulose determinations on vacuum dried pulp samples.

The importance of making accurate weighings at all points in the alpha-cellulose determination was established. It is recommended that only a good quality analytical balance with calibrated weights be used. The recommendation of T203 that alcohol and ether can be used to hasten the drying of the alpha-cellulose residue was shown to lead to high and unreliable results. The method of sample preparation was shown to be very significant. Grinding in a mill of the Koerner type resulted in a degradation of the pulp and produced alpha-cellulose results considerably lower than those obtained on thin sheets. The method of stirring the sodium hydroxide pulp mixture was a slightly significant factor. The stirring method should be specified in any procedure but need not be elaborate. The sample size was also significant for all pulps. This, however, was not an important variable . The sample size should be fixed at some convenient weight. A very important variable is the dilution of the 17.5% sodium hydroxide prior to filtering. Results show that, if the pulp is filtered directly from the 17.5% sodium hydroxide without dilution, the alpha-cellulose results are considerably higher than those obtained by any method of dilution. One method of dilution gives about the same decrease in alpha-cellulose as another. The ACS method of dilution, however, did produce slightly lower results than the TAPPI method of dilution. The one hour

standing period recommended by ACS is undoubtedly responsible for this slight difference. Some conclusions and preliminary recommendations are included which are based upon the results of this study.

4. THE CONTROL CHART IN SULPHITE ACID PLANT OPERATION—W. W. Marten

5. STATISTICAL QUALITY CONTROL APPLIED TO PAPER—FOIL LAMINATION PROCESS — Arthur C. Dreshfield

6. SOME BASIC CONCEPTS OF STATISTICS AND THEIR APPLICATION TO SIMPLE INDUSTRIAL EXPERIMENTATION—Maynard S. Renner

Many people have contributed to the development of the science of statistics, which is the science of handling data. Some of the basic concepts of this science are discussed here in terms of a simple laboratory problem, particularly with the experimentalist who is not a trained statistician in mind.

The problem discussed is to compare two different treatments in cases where the evaluation data are the "go" or "no go" type rather than being measurements, and thus fall into the binomial distribution.

The binomial distribution, the nature of infinite populations and their description in terms of a few simple numbers, as well as the relationship of laboratory data to infinite populations, are discussed. The null hypothesis is described and it is pointed out that it can never be proved but can only be disproved. Then the subject of the degree of risk and of confidence limits are discussed briefly as well as the value of proper design of experiments.

The problem of drawing inferences about populations from samples is discussed briefly and it is pointed out that the science of statistics has been dveloped in order to arrive at a more quantitative metsod of treatment of the problem of handling data.

7. THE ERROR OF A NOMOGRAM FOR THE CALCULATION OF CLARK SOFTNESS—Geoffrey Beall, Robert P. Anderson and Arlis A. Harvey

A nomogram based on the formula for Clark softness which is the basis for the Clark instrument used to measure rigidity, stiffness and softness of paper and paper board, was developed and its accuracy investigated.

It was found that there is little to be gained by employing arithmetic rather than nomographic methods once the physical determinations have been made. The only question is in the realm of convenience; the latter having the advantage of involving something like one-fifth the work of the former.

The results also indicated that the determination of Clark softness would be more reliable if only one operator were employed in making the physical tests.

2:00 P.M. COATING (East Ball Room)
Frank J. Egan, Chairman

1. THE AIR KNIFE METHOD OF COATING—F. H. Frost

The author was associated with the development of the air coater in both the early and later stages of its development so can speak with some first-hand knowledge on the history of this development.

In the early models, which were used for experimental production, the chief difficulty that was experienced was a rather severe mottling of the coating. This was called an orange peel effect as the final coating had somewhat the appearance of the skin of an orange. This defect was a hurdle which had to be overcome if this method of air coating was to reach the potentials which it was believed to possess. Much time and many dollars were spent in an attempt to overcome the orange peel effect.

When air issues from a nozzle the density of the air varies from that of the surrounding air outside the nozzle. Under certain conditions of light it is possible to actually see the air boundaries of the air jet emerging at the nozzle. It was such an observation which eventually indicated the right track which led to the perfection of the air coater.

In the early models the air issued from the nozzle in a divergent stream. The divergence of this stream dissipated the energy of the air and produced a band of air which acted much like a broom in sweeping off the excess coating supplied by the color roll. After this air divergence had actually been observed, the conclusion was reached that the sweeping or brushing effect was responsible for the mottle and that what was needed was nondivergent air stream which would act like a knife rather than a broom.

It was no easy task to accomplish this change from a divergent to a non divergent air stream; from a brushing to a cutting effect. However, the problem was finally solved by Mr. K. E. Terry, the company's chief engineer, and is described in his patent of 1938.

As soon as it was possible to obtain a nondivergent stream of air it was found that the air acted very similarly to a flexible knife edge and that this knife edge of air cut off the excess coating supplied by the color roll in a clean and sharp fashion producing a coated sheet the surface of which was very flat and smooth and contained no mottle.

The Warren Company has designed and built a sheet air coater for laboratory experimentation. This coater coats a sheet 5 by 17 inches and the type of coating which is obtained is almost an exact duplicate of the coating which is obtained under commercial conditions. A group of these machines have been built and some have been supplied to various companies and it is possible that if enough interest is shown by the industry as a whole that additional hand coaters will be constructed.

2. COATING PAPER ON THE PAPER MACHINE BY ROTOGRAVURE—OFFSET METHOD—Gerald Heywood

The equipment and operation of the rotogravure—offset method of paper coating is discussed.

The coating is applied from the color pan to a color roll which deposits the color on a knurled roll having a continuous pattern of cuplike indentations. A doctor removes the excess and the coating is transferred to the paper by the use of a rubber covered coating roll which is in contact with the knurled roll. The coating weight is determined by the number and volume of the engraved cups.

7. COLLOIDAL EQUIPMENT APPLIED TO THE HOMOGENIZATION OF CLAY AND PAPER COATINGS—David E. Gould

The mechanics of homogenizing mixtures of normally incompatible liquids and insoluble solids are primarily concerned with the reduction in size of relatively large masses to smaller fragments of definable sizes. Preparation of emulsions and dispersions, permitting gerater facility in controlling the degree of pnetration and the thickness of the layer of the special coating material used to surface pulp and paper, involves the following consideration:

1 To formulate the mixture to contain the proper proportion of oil, water and emulsifying agent to form a stable emulsion, and the addition of a suitable dispersing agent to give the desired stability and flow characteristics to the pigment suspenson. This includes such factors as pH control, prevention of the formation of flocculants, order of addition of ingredients, etc.

2 To adequately mix the ingredients and achieve a uniform mixture, sufficiently stable to facilitate additional proccessing. This includes the choice of proper mixing equipment as well as selection of suitably designed containers to correlate the action of the mixer with the mechanics of the heating, cooling and discharge cycles of the processing period.

3 To homogenize the resultant mixture, reducing particle sizes of the oil and water emulsion as well as the mineral matter dispersion, to fines of colloidal or near colloidal sizes.

Techniques and materials used for the application of coatings to the surface of paper have improved considerably since 1880, when it was considered good practice to apply a thin layer of clay and glue slurry manually over the surface of a web of paper, which was then dried and calendered. Colloid mills, homogenizers, and dispersers have facilitated the preparation of the miscellaneous emulsions and dispersions permitting dilution of the effective coating agent with an inert,

volatile liquid, easily evaporated, leaving a uniform and well dispersed layer of the active coating material.

Eppenbach, Inc., have pioneered in the field of specialized mixing, grinding, and homogenizing equipment for over 25 years, with resultant development of a series of vertical colloid mills which contain features unique to this type of equipment. Special rotors and stators have been designed intended to implement or supplement impact stresses by the creation of smearing, shearing, and crushing farces. An efficient water-cooling system has been incorporated into the mills permitting the processing of material at very fine gap settings; adjustable micrometer settings and a recirculating bypass system have made these mills flexible and adaptable for many processing problems. One of the outstanding features is a built-in turbine integrally designed into the rotor assembly, incorporating centrifugal pump principles into the basic operation of the rotor and stator assembly, drawing material continuously from the hopper into the grinding chamber.

4. MACHINERY FOR PAPER COATING-CALENDERS —E. E. Thomas

2:00 P.M. WATER (Grand Ball Room)
L. B. Miller, Chairman

1. A REVIEW OF THE BASIC PRINCIPLES OF CORROSION CONTROL BY THE USE OF LIME—Edward S. Hopkins

The basic principle showing corrosion of iron and steel water pipe as a function of the dissolved oxygen are reviewed. Neutralization of free carbon dioxide in low alkaline water by lime and the subsequent precipitation of a calcium carbonate-ferric oxide coating on pipe surfaces retards corrosion to the point of practical elimination. A water so treated is stable when maintained at the calcium carbonate saturation point. Cost of treatment is given and is economical.

2. PENNSYLVANIA WASTE WHITE WATER TREATMENT PLANT—Rodney F. Coltart

The Commonwealth of Pennsylvania Sanitary Water Board has very broad powers for the enforcement of the present anti-pollution laws. It has set up a classification of streams and a treatment program as a guide to municipalities and industries to follow.

Many waste treatment plants, however, have already been built to protect essential water supplies and one such treatment plant is now in operation at the Beach and Arthur Paper Company at Modena, Pennsylvania, this plant has a capacity of 30 tons per day of finished product.

At this plant, the use of water in mill operations and the wastage of water was reduced to a minimum. All waste water from the mill was brought to a common point. A small pump station to elevate the waste water to the treatment plant at as near a constant rate as possible was built, and dry chemical feeding facilities were provided.

About 24 p.p.m. of alum and 12 p.p.m. of soda ash are added to the waste which has a volume of 540,000 gallons per day. Best results are obtained when the pH of the plant effluent is 6.2 to 6.3. A mixing tank equipped with a horizontal type slow mixer flocculates the waste and chemicals for about 13 minutes. The mixed wastes then flow to a rectangular settling tank equipped with a straightline type sludge collector.

A 3.2 hour detention period is provided in this settling tank. Sludge is withdrawn under hydrostatic pressure to a sump and then pumped automatically to a lagoon. The re-use of the solids in the sludge at this mill did not prove practical.

Operating results show a 92% reduction in total suspended solids and a 90% reduction in 5 day B. O. D. The sewage B. O. D. population equivalent per ton of product amounts to 13, and the volatile suspended solids in pounds per ton of product is 6.1. The plant as designed is simple to operate and economical to build.

3. STUDIES OF SLIME CONTROL IN THE GROUNDWOOD MILL—B. F. Shema, J. B. Anderson, and W. B. Van Horn

Equipment costs should be reviewed in conjunction with analysis of chemical treatment. Since fixed charges are a small part of operating cost, chemical cost is usually the important consideration. Other items influence equipment selection by virtue of peculiarities in the existing plant, including requirement for large volumes of process water, fluctuation of raw water characteristics and space limitations.

4. ECONOMICAL CONSIDERATIONS OF FEED-WATER CONDITIONING—F. N. Kemmer

The pressure of advertsing new products, while serving a useful purpose, often draws attention from basic factors in equipment selection. Choosing water conditioning equipment requires careful review of all processes and reagents available. The fundamental requirements involve reduction of hardness, alkalinity, total solids, and silica. Precipitation, direct addition, and ion exchange classify the processes available.

A tabulation of reagents available for reduction of hardness, alkalinity, total solids, and silica on an equivalent basis offers a convenient index for process selection. Such an index shows lime or Dolomitic lime to be the most economical reagent for a variety of applications. The low efficiency of ion exchange equipment is illustrated by the relative positions of acid and salt in the cost index. Available silica removal data are sufficiently accurate to allow comparison of relative efficiencies of applicable reagents. Silica removal by ion exchange is generally so expensive as to eliminate its consideration at present for treating makeup.

5. PROCESS WATER FOR THE MANUFACTURE OF GROUNDWOOD PAPERS—J. G. Patrick

6. QUALITY OF PROCESS WATER FOR THE MANUFACTURE OF ALKALINE PULPS (KRAFT AND SODA)—L. B. Miller

2:00 P.M. PAPERMAKING (Cylinder) (West Ball Room)
O. E. S. Hedbring, Chairman

1. FEATURES OF AN EIGHT-CYLINDER BOARD MACHINE—C. Ives Gehring

This discussion concerns an eight-cylinder, 91 inch trim, board machine making high grade single, double lined and solid board specialties for paper food containers and closures. Outstanding properties of the grades are: strong, hard, stiff sheets with high density, well sized, maximum ply adhesion and top quality printing surfaces.

Typical stock furnishes included bleached sulphites and kraft or unbleached kraft for liner. On filled sheets the filler is generally unbleached sulphites or kraft, groundwood and converting waste.

A batch stock preparation system includes hydrapulpers, beaters, cycling chests, and jordans. The latter being the only tackle operating continously.

The machine has a three system stuff box, each with an eight gate arrangement providing maximum flexibilty for operator under normal or emergency conditions. Each vat has an individual twelve-plate flat screen discharge to vat inlet by gravity. The vats are of counterflow design with 36 inch cylinders equipped with self-cleaning showers, but manually operated. White water is used 100% on all screen and cylinder showers.

Water removal equipment consists of one 25 inch suction drum press, three large primary presses, a 20 inch suction primary, and three main presses, the third press being reversed. A long bottom felt (140 feet) travels through to the first main press and the short top felt (70 feet) carries only past the third primary, leaving the suction primary and main press with bare top rolls. All bare rolls have oscillating doctor blades.

Entire wet end is equipped with an electric helper drive on all cylinders and most press rolls. A generator on end of variable speed line shaft drives the helping equipment.

Each helper motor has separate field rheostat permitting individual speed alteration and a master field permits entire system to be altered simultaneously in relation to the main first press or wet end drive.

The machine has 59, 4-foot driers, equipped with a hood and a hot air system with ducts at critical points. Three calendar stacks, two reels, and a winder capable of operating straight or reverse completes the machine.

2. ROUTINE TESTING PROCEDURES CYLINDER BOARD MILLS—O. E. S. Hedbring

Thursday, February 26, 1948

9:00 A.M. PREPARATION OF PAPERMAKING MATERIALS (West Ball Room)

P. P. Gooding, Chairman

1. THE FUNDAMENTAL OF CONTROLLED FLOW BEATING—L. E. Randecker

A new type beater is described wherein the tub is separately located from the roll and a pump is used to deliver a controlled quantity of stock. The object of this arrangement is to obviate the necessity of having the roll perform a circulating function in addition to stock treatment.

The advantages of this equipment are described and a comparison is made with the action of the conventional beater.

2. RAG MILL REFINING—H. P. Espenmiller

A new approach to the preparation of rag fibers for the manufacture of rag and rag content papers such as bond, ledger, and banknote is described.

Preliminary field trials in separate mills on a commercial scale have been concluded wherein a Hydrafiner has been used to replace the finishing beater for the preparation of rag and rag-sulphite furnishes following the prebeating and washing operation.

Power requirements have been reduced approximately 75%. Batch refining time has been decreased by 60%. Felting characteristics (formation) show marked improvement and the physical strength properties are equal to papers manufactured from 100% beater prepared stock.

3. THE MECHANISM OF WATER RESISTANCE — W. S. Wilson

The apparent specific gravity of immersed sheets, the absence of a line of demarcation between wet and dry areas on partially submerged strips, the seemingly low ceiling beyond which water penetration tests refused to be pushed, the insensitiveness of the water penetration test to aluminum ion concentration, and the fact that some free surface energy calculations intimated that paper should be waterproofed by amounts of rosin corresponding with this ceiling amount, all led to the collection of certain data. These data are presented together with the following conclusions by the author.

The exterior surfaces of pulp fibers can be made hydrophobic by engine sizing. The air bound to these hydrophobic surfaces causes sheets to float indefinitely, prevents water from increasing the transluscence of immersed sheets and by blocking the capillaries between the fibers prevents water from passing through the sheet by this path. Size particles are too big to enter the fibers, so except for a slight water resistance imparted by the aluminum ion, the path through the fibers themselves is not blocked and constitutes the ceiling beyond which the water penetration test cannot be pushed.

The water penetration test end point is apparently so sensitive that it appears long before the interior of the fibers is completely wetted. That is, the fibers are not softened enough to loose all fiber to fiber friction for hours after the water penetration end point is completed. This decrease in tensile strength with time can be put off by improved sizing to a degree that is very surprising to one imbued with the idea that a water penetration test really means something. Mersize and the aluminum ion concentration are very important in reducing the rate at which tensile strength is lost when the sheet is immersed.

4. STUDIES OF ROSIN SIZING III—COMPOSITION OF VARIOUS SIZE PRECIPITATES—D. Price

A previous paper presented data on the composition of standard rosin size precipitates prepared from sizes of 0 to 75% free rosin. It was found that the precipitate compositions could be explained by considering the precipitates to contain the free rosin initially present in the size as well as the products of the reaction.

$$Al^{+++} + 3\ Res^- + H_2O \rightarrow AlRes_2OH\downarrow + HRes\downarrow$$

(The symbol Res is used to represent the various resin acid radicals present in the rosin size solution.) In the present study, it was shown that sizes of 0 to 75% free rosin exhibited the same sizing efficiency when used under standard conditions on Burgess standard bleached sulphite pulp. In other words, the amount of free rosin had no effect on the sizing efficiency under these conditions.

Data presented for several samples of oxidized size precipitate show that the change in sample weight and amounts of hydrogen and carbon lost depend upon the conditions of oxidation. Oxidation was investigated as a method of completely insolubilizing the aluminum diresinate in the precipitate in order to obtain its quantitative separation from resin acids. While the insolubilization was achieved, it was of little analytical value since, at the same time, some of the initially free rosin was made inaccessible (ethyl ether insoluble).

Size precipitates prepared with an acid-alum blend in place of alum showed the expected increase in free rosin content.

Precipitates formed by the reaction of size and Ca^{++} in $Ca(HCO_3)_2$ hard waters and in the absence of alum were found to contain some calcium resinate if the water pH was greater than 6. At pH values of 6 and less, the washed precipitate consisted only of free resin acids. Alumed precipitates prepared in $Ca(HCO_3)_2$ waters contained too much alumina to permit satisfactory analysis of the mixture; this was also the case for alumed precipitates prepared in $NaHCO_3$ waters.

9:00 A.M. PLASTICS (Room B-C)

E. C. Jahn, Chairman

1. THE ADHESION PROPERTIES OF HIGH POLYMERS—A. D. McLaren and C. J. Seiler

A theory of the adhesion of high polymers to cellulose was presented last year (Paper Trade Journal, Nov. 6, 1947). and the authors report new data on the adhesion of copolymers to aluminum and to regenerated cellulose film. Parameters discussed are influence of thickness of polymer, rate of measurement, solvent composition, plasticizer content, molecular weight, tack temperature, humidity and polymer structure.

Two to six per cent water in a polyvinyl acetate solution improves adhesion of the polymer to aluminum after drying. This may be attributed to improved wetability during application.

If the molecular weight of polyvinyl acetate is high enough to prevent cohesive failure, adhesion is independent of molecular weight. The adehesion of styrene-methylvinyl ketone copolymers and of vinylacetate-methyl vinyl ketone polymers to cellulose film and to aluminum shows a gradual rise with ketone component up to about 80%. Above 80% ketone moiety, the adhesion increases rapidly. On the other hand, vinylacetate-vinyl chloride-maleic anhydride copolymers show a sudden increase in adhesion with initial small amounts of carboxyl concentration. At 3 to 4% maleicacid content the adhesion assumes a maximum in both cases but with aluminum adhesion falls off at higher concentrations of carboxyl.

Application of theory to these observations is considered in terms of the analogy between adhsion and solutions. Treatment of the subject of adhesion as a combined viscosity sorption phenomenon serves to unify the observations as mutually compatable.

2. VISCOSITY AND STABILITY OF CONCENTRATED SUSPENSIONS AND EMULSIONS—F. R. Eirich

During any work with concentrated systems their viscosity and stability are of prime importance. As regards the latter it is the stability during storage or various handling proc-

esses, as well as when in contact with given surfaces which is of main interest. Since viscosity, concentration and stability are closely connected, a survey of the relations of these three quantities in the light of some more recent work may be welcome.

Since all viscosity-concentration formulas can be expressed as a power series in the concentration, deviations from the factor 2, 5 of the linear term for spheres (Einstein), or from 14 of the square term (8 in capillaries) (Guth, Simha and Gold) can be attributed to either a greater hydrodynamical interaction from particle anisotrophy, to solute-solvent interaction, or to aggregation; these combined factors are now customarily termed intrinsic viscosities. The individual contributions can be assessed only where additional data from osmotic pressure or sedimentation velocity measurements or from light scattering are available. However, full use has not been made of a closer analysis of the viscosity-concentration curves as such.

It has been previously pointed out that the slope of the curves determines the volume of the hydrodynamically effective sphere, or the axis ratio of the effective ellpsoid, but the former can also be found from the concentrations at which departure from the predicted curves occurs. The presence of a discrepancy of the two volumes thus determined, and the fact whether the divergent curves can be fitted by new values, or vary continuously, can be interpreted in terms of various types of association. Such associations are indicative of the readiness of the particles to undergo further aggregation or to adhere to solid surfaces.

While this may be found true in systems of concentrations up to 50% in terms of the effective volume, some results have been gained in suspensions and emulsions of up to 75%. Such concentrated systems were found to be much more stable if formed by grinding instead of precipitation or emulsification, and some explanation can be offered for this. The stabilisers which have to be used become very complex though, all the more, since at the same time they are usually wanted to facilitate the sticking of the particles to given surfaces.

3. PHENOL-FURFURAL VARNISHES FOR LAMINATES—Harry Klein

One of the many applications for phenolic laminates is in the electrical industry. To produce laminates of excellent electrical properties it has been necessary to use a mixture of cresol isomers. These have been in short supply for the past ten years. The resin industry has been seeking a means of producing a 100% phenol resin of excellent electrical properties using pure phenol, which is much more readily available.

It has been found that by the use of furfural in the reaction and using special techniques a 100% phenol base varnish has been produced which makes laminates as good or better both dielectrically and mechanically than is possible with the best cresol varnishes.

There are eight possible advantages of this varnish over the cresol varnishes. Among the advantages are greater availability, more uniform product, possible lower price, better mechanical properties, especially Izod impact strength, less cold flow of finished laminate, and possibility of decreasing treating machine losses.

One possible disadvantage is that the color of the finished laminate is dark brown and not yellow as is the case with the usual phenol-formaldehyde laminates.

The electrical and mechanical properties of paper base laminates are given in some detail. Many hundreds of thousands of pounds of such a varnish have been used in the past year by the laminating industry. The varnish is readily available.

9:00 A.M. Mill Instrument Control (Room A)
R. W. Porter, Chairman

1. CONTINUOUS MEASUREMENT OF SHEET MOISTURE—H. A. Sholl

Starting with 1937 when the Moist-O-Graph was used successfully for the measurement of moisture in cotton threads, Brown engineers have been developing and perfecting an instrument that would accurately and reliably measure the moisture content of a moving paper sheet. Utilizing the relationship between the electrical conductivity of the sheet and its moisture content, these engineers developed the Paper Moist-O-Graph, an instrument which provides continuous indication and record and remains stable under variations in machine speed, mechanical draw, machine ventilation, furnish, caliper and sheet formation. Installations were made in several mills manufacturing a variety of paper and board, and tests over a ten year period proved successful on blueprint, board, bristol, chart, chip, coated, condenser tissue, container, currency, folding box, greaseproof, kraft label ledger lithograph, manila, mill wrapper, mimeograph, offset, rayon pulp, roofing, felt, test liner, and toilet paper. Machine speeds up to 2000 feet a minute can now be handled.

2. FLOW MEASUREMENT AND CONTROL—W. S. Yunker

3. TEMPERATURE MEASUREMENT AND CONTROL—John Chandler

4. METHODS OF MEASURING LIQUID LEVEL—Norman Gollin

5. CONTROL VALVES AND POSITIONERS—John R. Robins

1:15 P.M. Annual Luncheon (Grand Ball Room)
W. F. Gillespie, presiding

1. ADDRESS—Brig. Gen. W. E. Brougher

New TAPPI Members

The Executive Committee of the Technical Association of the Pulp and Paper Industry has elected the following to membership:

Raymond A. Barkhuff, Jr., Research Group Leader, Monsanto Chemical Co., Springfield, Massachusetts, a 1940 graduate of Colgate University with a Ph.D. degree from Rensselaer Polytechnic Institute.

Arthur C. Bird, Project Engineer, Hardy S. Ferguson & Co., New York 10, New York, a 1917 graduate of Worcester Polytechnic Institute.

Maurice E. Cody, Vice-President and General Manager, The Black-Clawson Co., Hamilton, Ohio.

Edward L. Cowan, Assistant Chief Engineer, Gaylord Container Corp., Bogalusa, Louisiana, a 1930 graduate of Mississippi State College.

Arthur E. Crane, in charge of engineering, Crane & Co., Inc., Dalton, Massachusetts.

Jean DuPont, Managing Director, Anciens Establishments Louis De Naeyer, S. A., Willebroek, Belgium, a 1933 graduate of Ecole Polytechnique, Universite de Bruxelle.

William G. Fowler, Technical Representative, British International Paper Ltd., London, England.

Allen H. Gridley, Chief Engineer, Hardy S. Ferguson & Co., New York 10, New York, a 1913 graduate of Worcester Polytechnic Institute.

Frans A. Janson, Plant Engineer, Marinette Paper Co., Marinette, Wisconsin, a 1923 graduate of the University of Michigan.

Peter J. Jerardi, Chief Engineer, The Black-Clawson Co., Hamilton, Ohio, a 1927 graduate of Massachusetts Institute of Technology.

Thomas C. Johnson, Superintendent of Pulp Mill, Union Bag & Paper Corp., Savannah, Georgia. Attended Washington University.

Rudolf L. Kutter, Vice-President and Sales Manager, The Black-Clawson Co., Hamilton, Ohio, a 1935 graduate of the University of Cincinnati.

Edward M. Root, Sales Manager, Dilts Machine Works Div., The Black-Clawson Co., Fulton, New York, a 1935 graduate of the New York State College of Forestry.